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ABSTRACT

This curriculum guide contains four units and incorporates the needed component parts to aid agriculture teachers in the implementation of the Vocational Instructional Management System. The guide consists of these four units: economic principles in agriculture (6 lessons), business management (17 lessons), planning the farm business (9 lessons), and operating the agricultural business (5 lessons). Each unit begins with a section entitled "Getting Ready for This Unit," which contains important teaching information. The "Contents" section contains objectives, competencies, motivational technique or interest approach, references, and a competency profile. Each lesson contains the following components: objective, study questions, student references, teacher references, content outline, assignment sheet answers, and evaluation. Other contents of each lesson include assignment sheets, transparency masters, and handouts. (YLB)

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Instructor's Guide

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University of Missouri-Columbia

In cooperation with
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Instructor's Guide

AGRICULTURAL MANAGEMENT AND ECONOMICS

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Greg Omer should be recognized for his input in the development of this curriculum.

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FOREWORD

This Agricultural Management and Economics curriculum guide represents a major revision of the Agricultural Management and Economics guide (Volume 9 Number 2). Revision of this guide was suggested by the MVATA Teaching Aids Committee. The Agricultural Management and Economics Advisory Committee suggested the topics to be discussed and reviewed the materials. A student reference has been developed for Units I, II, and IV. The Missouri Farm Planning Handbook (Manual 75) is the student reference for Unit III.

It is no longer appropriate sound to teach only the specific facts relating to production agriculture. Our teaching approach needs to be broadened by blending agribusiness with the production aspects of agriculture. Although some of the concepts presented in this guide have been traditionally associated with an agribusiness operation, the principles may also apply to the operation of the farm business. The term agricultural business, used throughout this guide, refers to all businesses in agriculture, including the farming operation.

The guide consists of four units as follows: Unit I--Economic Principles in Agriculture; Unit II--Business Management; Unit III--Planning the Farm Business; and Unit IV--Operating the Agricultural Business. Check the Table of Contents for a detailed listing of lessons. The section in each unit titled "Getting Ready for this Unit" contains important teaching information. The "Contents" section in each unit contains objectives, competencies, references, and a competency profile.

During the summer of 1981, the Missouri State Board of Education formally adopted the concept of "Instructional Management Systems" (IMS) as a priority for the 1981-82 school year. The Missouri Commissioner of Education described the IMS concept as a practical way of "organizing for excellence" in education. To meet the demand for greater productivity and accountability, Dr. Frank Drake, Director of Vocational Education, applied the elements of IMS to form the "Vocational Instructional Management System" (VIMS). The VIMS process provides a framework to use in planning and organizing to assure excellence in Missouri's vocational educational system by focusing greater attention on the management of teaching and learning.

This guide incorporates the needed component parts to aid agriculture teachers in the implementation of VIMS. For ease of use, performance objectives and competencies have been included at the beginning of each unit, as well as being incorporated within each lesson. A competency profile has also been provided in each unit for convenient record keeping.

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AGRICULTURAL MANAGEMENT AND ECONOMICS

TABLE OF CONTENTS

ACKNOWLEDGMENTS ii

FOREWORD iii

TABLE OF CONTENTS iv

TEACHING CALENDAR vi

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE

GETTING READY FOR THIS UNIT . . . . I-i

CONTENTS . . . . I-i

COMPETENCY PROFILE . . . . I-v

Lesson 1–The Principle of Diminishing Returns I-1
Lesson 2–Fixed and Variable Costs I-23
Lesson 3–Substitution of Inputs I-43
Lesson 4–Opportunity Costs I-61
Lesson 5–Supply and Demand I-73
Lesson 6–Time Value of Money I-101

UNIT II - BUSINESS MANAGEMENT

GETTING READY FOR THIS UNIT . . . . II-i

CONTENTS . . . . II-i

COMPETENCY PROFILE . . . . II-vii

Lesson 1–Ways of Organizing a Business II-1
Lesson 2–Steps in Buying Land II-13
Lesson 3–Starting an Agricultural Business II-31
Lesson 4–Using Contracts in Agriculture II-39
Lesson 5–Business Procedures II-59
Lesson 6–Agribusiness Records II-67
Lesson 7–Managing Inventory and Determining Selling Price II-75
Lesson 8–Agricultural Business Customer Transactions II-83
Lesson 9–Preparation and Importance of Sales Tickets II-99
Lesson 10–Customer Credit II-121
Lesson 11–Loans for Agricultural Businesses II-135
Lesson 12–Conducting a Financial Analysis II-143
Lesson 13–Effects of Income Tax on the Agricultural Business II-153
Lesson 14–Calculating Depreciation for Tax Purposes II-167
Lesson 15–Managing Risk in the Agricultural Business II-191
Lesson 16–Insurance Needs in the Agricultural Business II-201
Lesson 17–Cooperating Agencies in Agriculture II-209

UNIT III - PLANNING THE FARM BUSINESS

GETTING READY FOR THIS UNIT . . . . III-i

CONTENTS . . . . III-i

COMPETENCY PROFILE . . . . III-v

Lesson 1--Setting Farm Business Goals III-1
Lesson 2--Determining the Present Situation III-11
Lesson 3--Planning a Profitable Cropping System III-35
Lesson 4--Determining Machinery Needs III-45
Lesson 5--Planning a Profitable Livestock System III-65
Lesson 6--Determining Labor Needs and Uses III-77
Lesson 7--Determining the Amount of Capital Needed for a Farm Plan III-95
Lesson 8--Estimating Cash Income and Farm Business Profitability III-101
Lesson 9--Revising a Farm Plan III-111

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

GETTING READY FOR THIS UNIT . . . . IV-i

CONTENTS . . . . IV-i

COMPETENCY PROFILE . . . . IV-v

Lesson 1--Role of the Employee in the Agricultural Business IV-1
Lesson 2--Communication Skills Needed in Agricultural Business IV-17
Lesson 3--Skills Needed for an Agricultural Sales Career IV-31
Lesson 4--Promoting Agricultural Products. IV-43
Lesson 5--Using Agricultural Displays IV-53

AGRICULTURAL MANAGEMENT AND ECONOMICS

TEACHING CALENDAR

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE

	days
Lesson 1: The Principle of Diminishing Returns	5
Lesson 2: Fixed and Variable Costs	4
Lesson 3: Substitution of Inputs	3
Lesson 4: Opportunity Costs	4
Lesson 5: Supply and Demand	7
Lesson 6: Time Value of Money	9

UNIT II - BUSINESS MANAGEMENT

Lesson 1: Ways of Organizing a Business	3
Lesson 2: Steps in Buying Land	4
Lesson 3: Starting an Agricultural Business	2
Lesson 4: Using Contracts in Agriculture	4
Lesson 5: Business Procedures	2
Lesson 6: Maintaining and Utilizing Agricultural Business Records	3
Lesson 7: Managing Inventory and Determining Selling Price	3
Lesson 8: Agricultural Business Customer Transactions	4
Lesson 9: Preparation and Importance of Sales Tickets	5
Lesson 10: Customer Credit	4
Lesson 11: Loans for Agricultural Businesses	5
Lesson 12: Conducting a Financial Analysis	12
Lesson 13: Effects of Income Tax on the Agricultural Business	4
Lesson 14: Calculating Depreciation for Tax Purposes	13
Lesson 15: Managing Risk in the Agricultural Business	6
Lesson 16: Insurance Needs in the Agricultural Business	4
Lesson 17: Cooperating Agencies in Agriculture	3

UNIT III - PLANNING THE FARM BUSINESS

Lesson 1: Setting Farm Business Goals	3
Lesson 2: Determining the Present Situation	5
Lesson 3: Planning a Profitable Cropping System	3
Lesson 4: Determining Machinery Needs	6
Lesson 5: Planning a Profitable Livestock System	3
Lesson 6: Determining Labor Needs and Uses	4
Lesson 7: Determining the Amount of Capital Needed for a Farm Plan	3
Lesson 8: Estimating Cash Income and Farm Business Profitability	3
Lesson 9: Revising a Farm Plan	6

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

Lesson 1: Role of the Employee in the Agricultural Business	2
Lesson 2: Communication Skills Needed in Agricultural Business	3
Lesson 3: Skills Needed for an Agricultural Sales Career	3
Lesson 4: Promoting Agricultural Products	5
Lesson 5: Using Agricultural Displays	4

AGRICULTURAL MANAGEMENT AND ECONOMICS

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE

GETTING READY FOR THIS UNIT

Economic principles are important regardless of the farm or agribusiness operation. An understanding of economic principles must be carried to the application stage if sound decision-making is to result.

Throughout this unit examples have been included; however, the instructor is encouraged to provide local examples. Sample answers have been provided for many of the assignment sheets. The instructor should provide local data (i.e. local market prices) where applicable.

CONTENTS

Lesson 1–The Principle of Diminishing Returns I-1
HO 1.1: Economic Terms
TM 1.1: Production Function
TM 1.2: Hog Houses
TM 1.3: Blank Graph
TM 1.4: Effects of Hiring Additional Employees in a Lawn Mowing Service
AS 1.1: Hog Houses
AS 1.2: Blank Graph
AS 1.3: Effects of Hiring Additional Employees in a Lawn Mowing Service
AS 1.4: How Heavy Should I Feed Market Hogs?
Lesson 2–Fixed and Variable Costs I-23
TM 2.1: Fixed and Variable Costs
TM 2.2: Classification of Costs
TM 2.3: Total Cost
TM 2.4: Time Relationships
AS 2.1: Classification of Costs
AS 2.2: Fixed/Variable Costs
Lesson 3–Substitution of Inputs I-43
HO 3.1: Substitution Equivalents for Feeds
TM 3.1: Substitution
TM 3.2: Substituting Silage for Corn
AS 3.1: Substituting Silage for Corn
AS 3.2: Substituting Types of Advertising
AS 3.3: Substitution of Hay for Corn in Steer Ration
Lesson 4–Opportunity Costs I-61
TM 4.1: SOE Program
TM 4.2: Return on Investment for a Cooperative Store
AS 4.1: SOE Program
AS 4.2: Return on Investment for a Cooperative Store
Lesson 5–Supply and Demand I-73
HO 5.1: Sources of Supply and Demand Information
TM 5.1: What Controls Markets?
TM 5.2: Shifts in Demand
TM 5.3: Shifts in Supply

TM 5.4: Blank Graph
TM 5.5: Supply Price Elasticity
TM 5.6: Demand Price Elasticity
AS 5.1: Supply and Demand Curves
Lesson 6–Time Value of Money I-101
HO 6.1: Future Value at Compound Interest
HO 6.2: Future Value of Annuity of $1
HO 6.3: Present Value of $1
HO 6.4: Present Value of Annuity of $1
HO 6.5: Annual Amortization Table
AS 6.1: Time Value of Money
AS 6.2: Present Value
AS 6.3: Amortization
AS 6.4: Profitability

OBJECTIVES

1. The student will be able to determine the point of maximum net returns (profit) given a sample list of inputs and outputs and the prices of each.

2. The student will be able to determine the per unit fixed and variable costs of producing a given output (product).

3. The student will be able to determine the most profitable amount of substitution for inputs and/or outputs in agricultural enterprises.

4. The student will be able to identify the opportunity cost of choosing one economic alternative over another.

5. The student will determine how supply and demand interact to determine the price of agricultural commodities.

6. The student will be able to determine the effect that time has on the value of money.

NOTE: Percent of accuracy should be set by instructors to reflect passing grades within their school systems.

COMPETENCIES

1. Determine the point of maximum profit.

2. Determine the fixed and variable costs of production and use the fixed/variable concepts in making business decisions.

3. Determine when substitution is desirable and what is the most profitable level of substitution.

4. Determine the opportunity cost of choosing various business alternatives.

5. Determine the resulting change in price of commodities when shifts in supply and demand take place.

6. Determine the effects of the time value of money on business investments and decisions.

MOTIVATIONAL TECHNIQUE OR INTEREST APPROACH

1. Ask students how a football coach decides which play to run in a football game. What play would be best if it was third down and two yards to go? Would the suggested play be different if the down was third and fifteen? What factors does a coach consider when making such decisions?

2. Ask students what they would do in a basketball game in which they trailed by two points with seven seconds left. If you called time-out, what play would you send in? Would you try for a three-point shot to win the game, a two-point shot to tie the game, or drive to the basket and try to draw a foul? What factors should you consider in making such a decision?

3. Assume you received $100 from your grandparents for your birthday. What would you do with the money? What would your grandparents like you to do with the money? What would your parents (or guardians) prefer? Why are the preferences of each different?

4. Develop a discussion of an agricultural business that is going to manufacture and sell a new line of pet food. Ask the students questions relating to the profit maximizing principles of economics. Possible questions follow.

   a) What is the bottom line goal of adding the pet food line?
   b) How will the business determine the appropriate production and sales capacity of the product line?
   c) How will the business decide the minimum production and sales needed to break even?
   d) What are the considerations the company will face in terms of financing the new line?
   e) What will need to be considered in terms of this new line's effect on present company operations?

EVALUATION

1. Give short, objective tests following each lesson and a more in-depth objective test at the conclusion of the unit.

2. Observe the changes in behavior as evidence of an improved ability of students to deal with problems in this unit using background acquired from earlier units.

3. Observe students' attempts to solve similar problems in their supervised occupational experience programs.

REFERENCES AND MATERIALS

1. Student Reference

   a) Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit I.

2. Teacher References

   a) Agricultural Marketing Principles. Ohio State University, 1972.

   b) Baker, Richard L., ed. Profit-Maximizing Principles. Ohio State University, 1970. (Available from the Instructional Materials Laroratory)

c) Farm Business Management Analysis. University of Missouri-Columbia: Instructional Materials Laboratory, 1984. Units I and II.

d) University of Missouri-Columbia Extension Division agricultural publication

   1) G00450: How to Shop for Life Insurance

e) Mortenson, W.P.; R.A. Luening. The Farm Management Handbook. 5th ed. Danville, IL: Interstate Publishers, 1972.

f) Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.

g) Schneeberger, Kenneth C.; Donald D. Osburn. Farm Management Manual. 2nd ed. Danville, IL: Interstate Printer and Publishers, 1978.

h) Steward, Jim; Raleigh Jobes. Farm and Ranch Business Management. Moline, IL: Deere and Company, 1985.

AGRICULTURAL MANAGEMENT AND ECONOMICS

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE

MAJOR COMPETENCY PROFILE

Directions: Evaluate the student by checking the appropriate number or letter to indicate the degree of competency. The rating for each task should reflect **employability readiness** rather than the grades given in class.

Rating Scale:
3 **Mastered** - can work independently with no supervision
2 **Requires Supervision** - can perform job completely with limited supervision
1 **Not Mastered** - requires instruction and close supervision
N **No Exposure** - no experience or knowledge in this area

3	2	1	N	
				Economic Principles In Agriculture
				1. Determine the point of maximum profit.
				2. Determine the fixed and variable costs of production and use the fixed/variable concepts in making business decisions.
				3. Determine when substitution is desirable and what is the most profitable level of substitution.
				4. Determine the opportunity cost of choosing various business alternatives.
				5. Determine the resulting change in price of commodities when shifts in supply and demand take place.
				6. Determine the effects of the time value of money on business investments and decisions.

Agricultural Management and Economics

Unit I - Economic Principles In Agriculture

CLASS/SECTION ____________

STUDENTS:	Determine the point of maximum profit.	Determine the fixed and variable costs of production and use the fixed-variable concepts in making business decisions.	Determine when substitution is desirable and what is the most profitable level of substitution.	Determine the opportunity cost of choosing various business alternatives.	Determine the resulting change in price of commodities when shifts in supply and demand take place.	Determine the effects of the time value of money on business investments and decisions.				

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE

Lesson I: The Principle of Diminishing Returns

Objective: The student will be able to determine the point of maximum net returns (profit) given a sample list of inputs and outputs and the prices of each.

Study Questions

1. **Define the following terms: total product (TP), marginal product (MP), and average product (AP).**

2. **What are diminishing physical returns?**

3. **What are diminishing economic returns?**

4. **At what point is maximum profit reached?**

5. **What is the difference between the point of maximum production and the point of maximum profit?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit I.

2. Handout

   a) HO 1.1: Economic Terms

3. Assignment Sheets

   a) AS 1.1: Hog Houses
   b) AS 1.2: Blank Graph
   c) AS 1.3: Effects of Hiring Additional Employees in a Lawn Mowing Service
   d) AS 1.4: How Heavy Should I Feed Market Hogs?

Teacher References

1. Baker, Richard L., ed. Profit-Maximizing Principles. Ohio State University, 1970.

2. Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management, 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.

3. Transparency Masters

   a) TM I.1: Production Function
   b) TM I.2: Hog Houses
   c) TM I.3: Blank Graph
   d) TM I.4: Effects of Hiring Additional Employees in a Lawn Mowing Service

18

Lesson I: The Principle of Diminishing Returns

TEACHING PROCEDURES

A. Introduction

This unit provides the basic tools used for decision making in every type of agricultural business. Economic principles are important to all businesses in agriculture.

B. Motivation

Develop a situation appealing to students. An example could be a student who is hungry for hamburgers. Draw charts or graphs to show how much hunger is satisfied with each hamburger. Ask the students the following questions:

1. How many hamburgers can you eat?
2. How much satisfaction would you get from the first hamburger?
3. Is the second hamburger as good as the first?
4. How many hamburgers will it take to give you 100 percent satisfaction?
5. What happens if you continue to eat after 100 percent satisfaction?

NOTE: Use local examples in this lesson whenever possible. You may want to review motivation in Profit-Maximizing Principles.

C. Assignment

D. Supervised study

E. Discussion

Q1. Define the following terms: total product (TP), marginal product (MP), and average product (AP).

A1.
1) Total product is the total output or yield.
2) Marginal product is the change in output resulting from each additional unit of input.
3) Average product is the amount of output produced divided by the number of units of input.

Ask students to discuss the definitions of TP, MP, and AP, and then to discuss the following relationships on the production function. (TM 1.1)

1) As TP is increasing at an increasing rate, MP and AP are also increasing, but AP is lower than MP.
2) As TP continues to increase, MP begins to decrease, then AP begins decreasing.

3) When MP and AP cross, the TP is increasing at a decreasing rate.
4) When TP is at a maximum level, MP equals zero, and AP is still positive.
5) Once MP becomes negative, TP begins decreasing.

Q2. What are diminishing physical returns?

A2. The principle of diminishing physical returns states that at some point in time the marginal product decreases with each additional unit of input.

Ask students to discuss possible meanings of the principle of diminishing returns. Then work through examples as a group with your guidance. Remind students that they are looking at only one variable in the examples, but diminishing returns often involves several variables. Work through TM 1.2 (AS 1.1) with students. Graph TP, AP, MP on TM 1.3 (AS 1.2) and compare it with TM 1.1. TM 1.4 and AS 1.3-1.4 can be used as further examples. Also distribute HO 1.1, the list of key terms, and review them with the students. Use only those terms appropriate for this question. Review the remaining terms under the appropriate study questions.

1) Key terms (HO 1.1)
2) Steps for completing diminishing physical returns charts
    a) Calculate the marginal input for each level of production (i.e., the difference between the initial amount and the next level of input).
    b) Calculate the marginal product (MP) for each level of production (i.e., the difference between the initial amount and the next level of production).
    c) Calculate the average product (AP) for each level of production (i.e., the total product (TP) divided by the total number of units of input).

Q3. What are diminishing economic returns?

A3. The principle of diminishing economic returns states that beyond some point marginal economic returns decrease with each additional unit of input.

Ask students to discuss the meaning of the principle of diminishing economic returns. It may be helpful to review definitions of terms and the steps in completing a diminishing economic returns schedule.

1) Key terms (HO 1.1)

    NOTE: Be sure to explain the difference between marginal input cost (MIC) and marginal revenue product (MRP).

2) Steps for completing diminishing economic returns charts (Work through an example using TM 1.2.)
    a) Calculate TC (total cost) for each level of input. (i.e., units of input multiplied by cost per unit).

b) Calculate marginal input cost for each level.

$$MIC = \frac{\text{change in cost (\$)}}{\text{change in input}}$$

c) Calculate TR (total return) for each level of production (i.e., the units of output times the price per unit).

d) Calculate marginal revenue product (MRP) for each level.

$$MRP = \frac{\text{change in revenue}}{\text{change in input (marginal input)}}$$

NOTE: It is suggested that the student graph the TR, MIC and MRP curves on AS 1.2 (with the TP, AP and MP curves), then the instructor can graph them on TM 1.3. Next, work through another example with TM 1.4.

Q4. At what point is maximum profit reached?

A4. Maximum profit occurs when net economic returns are at their greatest point.

MIC = MRP

Ask students to discuss at what point they would produce if they were managing a business. Use the completed examples from other study questions. (TM 1.2 and TM 1.3)

Q5. What is the difference between the point of maximum production and the point of maximum profit?

A5.

1) **Maximum production is when production is at its highest possible level.**
2) **Maximum profit is when net economic returns are at their greatest point (MIC = MRP).**
3) **Maximum profit always occurs at a point of production that is lower than maximum production.**

Ask students to discuss the difference between maximum production and maximum profit. (TM 1.1 or TM 1.3)

F. Other activities

It is suggested that the students work through several more examples. A sample problem is given in AS 1.4.

G. Conclusion

After a certain point, the economic returns for each successive unit of variable resource added to a unit of fixed resource tend to decline. However, one should continue adding inputs as long as MIC< MRP. In order to receive maximum profit, expand production until MIC = MRP.

H. Competency

Determine the point of maximum profit.

I. Answers to Evaluation

Irrigated	Fertilizer	Marginal Input	Marginal Input Cost	Bus./Acre (TP)	Marginal Product	Marginal Revenue Product
Yes	0	XXX	XXX	102	XXX	XXX
Yes	1	1	7.20	122	20	40
Yes	2	1	7.20	137	15	30
Yes	3	1	7.20	146	9	18
Yes	4	1	7.20	152	6	12
No	0	XXX	XXX	85	XXX	XXX
No	1	1	7.20	97	12	24
No	2	1	7.20	105	8	16
No	3	1	7.20	109	4	8
No	4	1	7.20	110	1	2

1. B
2. E
3. D
4. D
5. B

J. Answers to Assignment Sheets

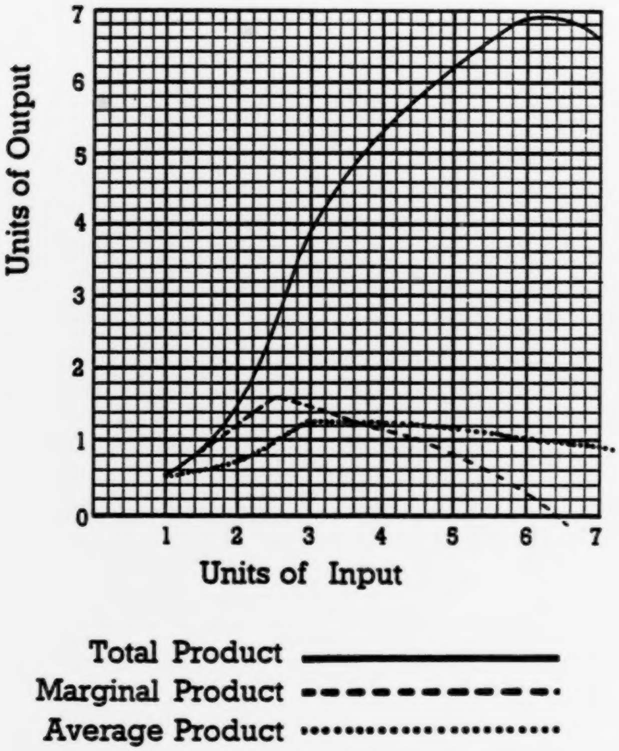
AS 1.1:

No. of Workers	No. of hog houses/day	MI	AP	MP	TR	MRP	TC	MIC
1	.5	xxx	.5	xxx	25	xxx	40	xxx
2	1.4	1	.7	.9	70	45	80	40
3	3.9	1	1.3	2.5	195	125	120	40
4	5.2	1	1.3	1.3	260	65	160	40
5	6.2	1	1.2	1.0	310	50	200	40
6	6.8	1	1.1	.6	340	30	240	40
7	6.6	1	.9	-.2	330	-10	280	40

Workers will be paid $40/day.
Return to labor from hog houses will be $50 each.

How many workers are needed? 5 (MRP ≥ MIC)

AS 1.2:



AS 1.3:

No. of Workers	TP No. of Lawns per Week	MI	AP	MP	TR	MRP	TC	MIC
1	12	1	12	12	180	x x x	50	x x x
2	25	1	12.5	13	375	195	100	50
3	35	1	11.6	10	525	150	150	50
4	44	1	11	9	660	135	200	50
5	50	1	10	6	750	90	250	50
6	55	1	9.2	5	825	75	300	50
7	58	1	8.3	3	870	45	350	50
8	60	1	7.5	2	900	30	400	50
9	61	1	6.8	1	915	15	450	50
10	60	1	6	-1	900	-15	500	50

Employee Salary $50 per week

Income Per Lawn $15 per lawn

(Use prices that reflect local situations.)

How many workers should I hire? 6 workers

AS 1.4:

How Heavy Should I Feed Market Hogs ?

TP = Weight of Hogs	AP	MI=Added Lbs. of Feed Fed	MP	TR	MRP	TC	MIC
180#	.28	650#	x x x	81	x x x	58.50	x x x
190#	.23	44#	10	85.5	4.50	62.46	3.96
200#	.22	45#	10	90	4.50	67.41	4.05
210#	.21	46#	10	94.5	4.50	70.65	4.14
220#	.21	47#	10	99.0	4.50	74.85	4.23
230#	.20	49#	10	103.5	4.50	79.29	4.41
240#	.19	51#	10	108.0	4.50	83.88	4.59
250#	.19	52#	10	112.5	4.50	88.56	4.68
260#	.19	53#	10	117.0	4.50	93.33	4.77

Use $45./cwt and $.09/lb feed prices.

Recalculate with current prices. (Don't forget weight discounts)

Up to what weight should I feed the hogs? 230 lbs. (MRP ≥ MIC)

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE Name ________________

Lesson I: The Principle of Diminishing Returns Date ________________

EVALUATION

Using the following information, calculate the MI, MIC, MP, and MRP for each of the test plots. These numbers will then be used to answer the following questions.

THE SITUATION:

The Snake River Flats FFA Chapter decided to run a fertilizer trial using their chapter corn plot. They divided the field into ten equal size plots. Five plots were irrigated and five were not. They applied different amounts of fertilizer to each of the plots.

Irrigated	Fertilizer	Marginal Input	Marginal Input Cost	Bus./Acre (TP)	Marginal Product	Marginal Revenue Product
Yes	0	XXX	XXX	102	XXX	XXX
Yes	1	___	___	122	___	___
Yes	2	___	___	137	___	___
Yes	3	___	___	146	___	___
Yes	4	___	___	152	___	___
No	0	XXX	XXX	85	XXX	XXX
No	1	___	___	97	___	___
No	2	___	___	105	___	___
No	3	___	___	109	___	___
No	4	___	___	110	___	___

Each test plot contained one acre. Each unit of fertilizer weighed 40 pounds.

Circle the letter of the best answer.

1. If fertilizer costs 18 cents per pound, what is the marginal input cost of one unit?

   a. 18¢ times yield
   b. 18¢ times 40 pounds
   c. 18¢ times change in yield
   d. It is different for irrigated and nonirrigated.
   e. Not enough information given

2. If the expected corn price is $2 per bushel, what is the most profitable level of fertilization for irrigated corn?

   a. 0 units
   b. 1 unit
   c. 2 units
   d. 3 units
   e. 4 units

3. If the expected price of corn is $2 per bushel, what is the most profitable level of fertilization for nonirrigated corn?

   a. 0 units
   b. 1 unit
   c. 2 units
   d. 3 units
   e. 4 units

4. Which of the following items would tend to increase the profit-maximizing level of fertilizer?

   a. Lower fertilizer price
   b. Higher expected corn price
   c. Irrigating
   d. All of above

5. If the FFA chapter plans to continue producing corn with irrigation cost at $50 per acre, which of the following should they produce?

   a. Irrigated corn with 3 units of fertilizer
   b. Irrigated corn with 4 units of fertilizer
   c. Nonirrigated corn with 3 units of fertilizer
   d. Nonirrigated corn with 4 units of fertilizer

ECONOMIC TERMS

Cost of Production: monetary outlay for the fixed and variable input factors needed to obtain output

Diminishing: decreasing

Diminishing Physical Returns: marginal outputs decreasing with each additional unit of input

Fixed Input: a factor whose quantity is given and not subject to variation by the producing unit during the time period in question

Input: a factor of production or basic resource; may be fixed or variable in nature

Marginal: the change or difference between two factors

Marginal Cost: the change in total cost, or total variable cost, due to one-unit change in output

Marginal Input Cost: the change in total cost or total variable cost, due to one-unit change in input

Marginal product: also known as marginal yield

Marginal revenue: the change in total return due to one-unit change in output

Marginal revenue product: the change in total revenue due to one-unit change in input

Net Returns: profit

Output: unit of production resulting from the combination of variable and fixed inputs

Point of maximum profit: marginal cost equals marginal revenue and marginal input cost equals marginal revenue product

Production: the combining of inputs to yield output

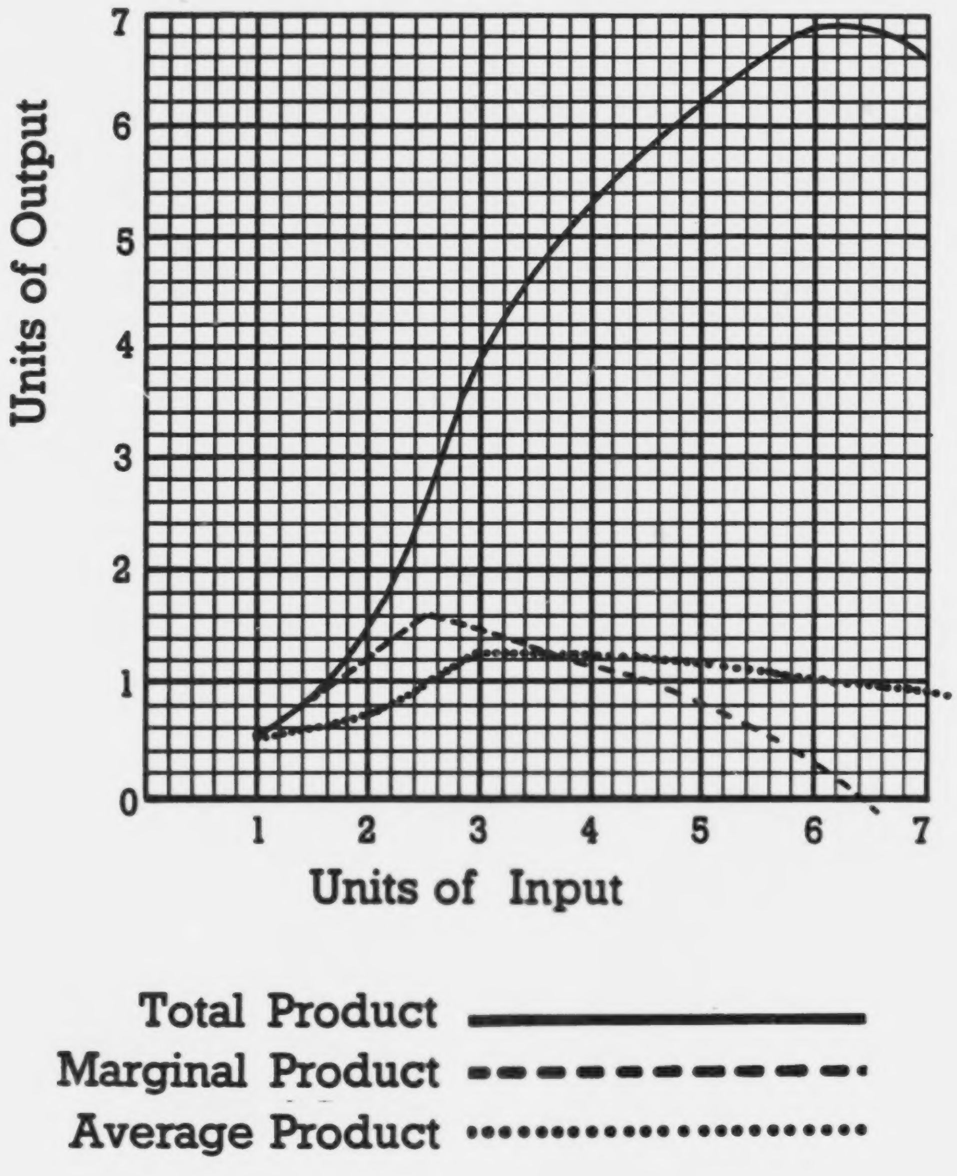
Profit: the financial returns after all costs have been paid

Total Cost: the sum of the cost of variable inputs and the cost of the fixed inputs at any given level of production

Total product: also known as total yield

Total returns: total of all receipts from a project before expenses are deducted

Production Function



Note: Data for this graph is from the situation presented in TM 1.2.

Source: Profit Maximizing Principles, Ohio State University, page 22.

Hog Houses

Betty Gotrich, owner of the Do Rite Construction Company, has compiled the following data about the relationship between the number of workers she has and the number of portable hog houses she can build in one day.

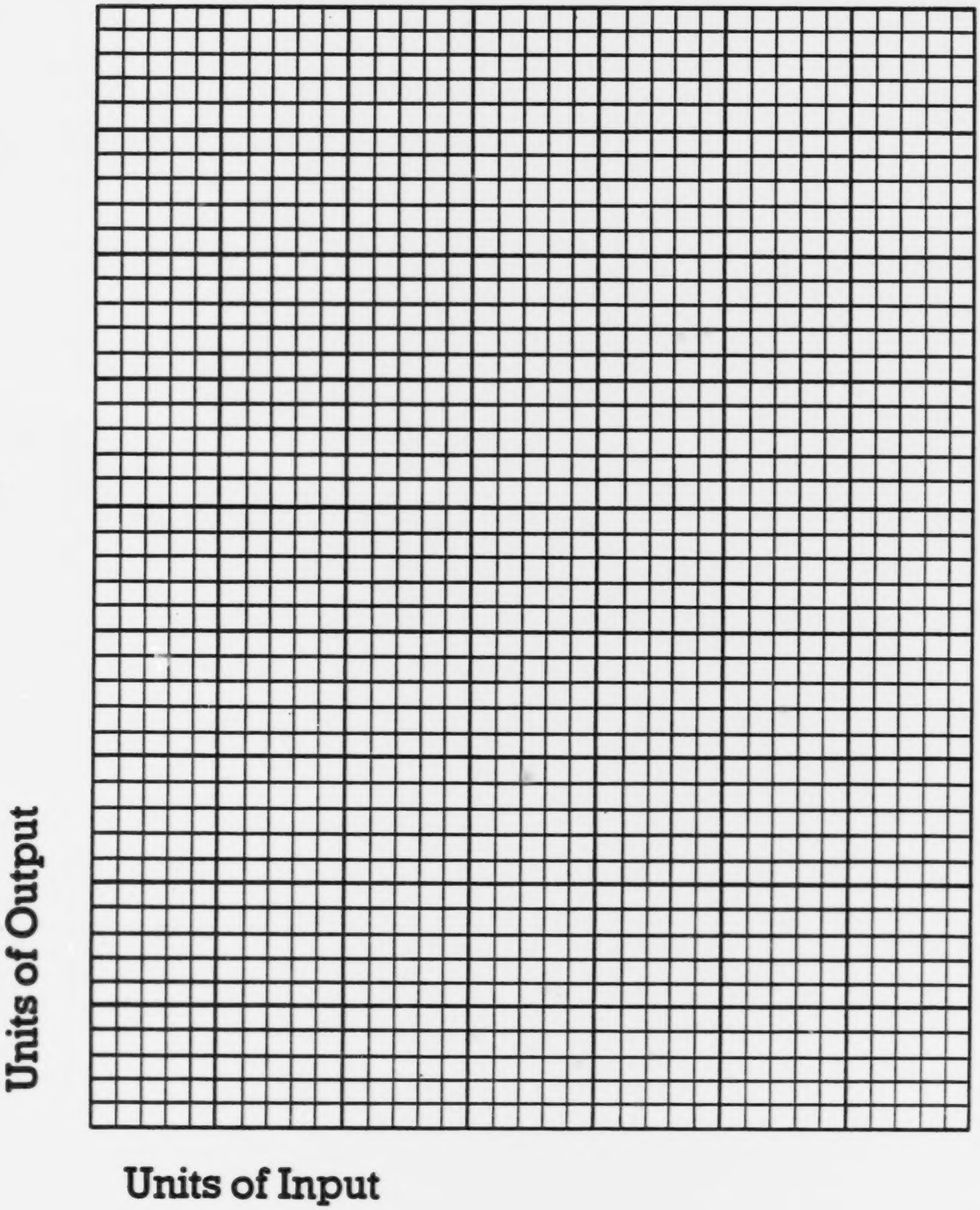
No. of Workers	No. of hog houses/day	MI	AP	MP	TR	MRP	TC	MIC
1	.5	xxx		xxx		xxx		xxx
2	1.4	1						
3	3.9	1						
4	5.2	1						
5	6.2	1						
6	6.8	1						
7	6.6	1						

Workers will be paid $40/day.
Return to labor from hog houses will be $50 each.

How many workers are needed? ______________________

TM 1.3
AS 1.2

Blank Graph



Effects of Hiring Additional Employees in a Lawn Mowing Service

No. of Workers	(TP) No. of Lawns per Week	MI	AP	MP	TR	MRP	TC	MIC
1	12					x x x		x x x
2	25							
3	35							
4	44							
5	50							
6	55							
7	58							
8	60							
9	61							
10	60							

Employee Salary $50 per week

Income Per Lawn $15 per lawn

(Use prices that reflect local situations.)

How many workers should I hire? ______

How Heavy Should I Feed Market Hogs ?

TP = Weight of Hogs	AP	MI=Added Lbs. of Feed Fed	MP	TR	MRP	TC	MIC
180#		650#	x x x		x x x		x x x
190#		44#					
200#		45#					
210#		46#					
220#		47#					
230#		49#					
240#		51#					
250#		52#					
260#		53#					

Use $45./cwt and $.09/lb feed prices.

Recalculate with current prices. (Don't forget weight discounts)

Up to what weight should I feed the hogs?________________

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE

Lesson 2: Fixed and Variable Costs

Objective: The student will be able to determine the per unit fixed and variable costs of producing a given output (product).

Study Questions

1. **What are fixed costs?**
2. **What are the five types of fixed costs?**
3. **What are variable costs?**
4. **When do variable costs become fixed?**
5. **How is the total cost calculated?**
6. **How can per-unit cost figures be used to make decisions?**
7. **What is the difference between the short and long run?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit I.
2. Assignment Sheets
    a) AS 2.1: Classification of Costs
    b) AS 2.2: Fixed/Variable Costs

Teacher References

1. Baker, Richard L., ed. Profit-Maximizing Principles. Ohio State University, 1970.
2. Schneeberger, Kenneth; Donald Osburn. Farm Management Manual. 2nd ed. Danville, IL: Interstate Printer and Publishers, 1978.
3. Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.
4. Transparency Masters
    a) TM 2.1: Fixed and Variable Costs
    b) TM 2.2: Classification of Costs
    c) TM 2.3: Total Cost
    d) TM 2.4: Time Relationships

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE

Lesson 2: Fixed and Variable Costs

TEACHING PROCEDURES

A. Review

Review the previous lesson.

B. Motivation

Develop a situation that will be appealing to the students. An example could be the costs of operating a car. You may develop a list of the costs of operating a car on the board by using these leading questions.

1. How many of you own a car?
2. How many of you drive the family car?
3. If you drive the family car, what costs do you have to pay? (Develop a list on the board.)
4. If you own a car, what costs do you have to pay? (Develop a list on the board.)
5. Are all the costs of operating a car alike?
6. What will be the cost of oil to you if you do not drive the car next year?
7. What will be the interest cost at 10 percent on $4,000 if you do not drive the car next year?
8. What other costs are associated with owning and operating a car? (List on board.)

NOTE: Classify the costs as fixed or variable.

C. Assignment

D. Supervised study

E. Discussion

Q1. What are fixed costs?

A1. Fixed costs are incurred regardless of the level of production or use.

Ask students to discuss the meaning of fixed costs. Try to get them to associate fixed with constant. Remind students that the goal of any business is to maximize profit.

1) Fixed costs are costs that remain constant (such as depreciation, taxes, etc.) regardless of the level of production
2) They are expenses that have to be paid on a regular basis.
3) Sometimes fixed costs are referred to as ownership or overhead costs.

Q2. What are the five types of fixed costs?

A2. The DIRTI Five are:

Depreciation
Interest
Repairs (shelter)
Taxes
Insurance

Ask students to discuss what types of costs they would classify as fixed.

Q3. What are variable costs?

A3. Variable costs change in direct relationship with the level of production or the amount of use.

Ask students to discuss the meaning of variable costs. Also ask students to classify the costs as fixed or variable costs in several examples. One example of variable costs would be the amount of fuel used in a tractor. The fuel consumption would be in direct relationship with the use of the tractor. (Use TM 2.1, TM 2.2 and AS 2.1)

Q4. When do variable costs become fixed?

A4. Once an item has been purchased it becomes a fixed cost. The money has been spent and cannot be spent elsewhere.

Have students discuss this and think of various examples such as the cost of seed corn becoming fixed after it has been planted.

Q5. How is the total cost calculated?

A5. Total costs are equal to the fixed costs plus the variable costs.

Ask students to discuss how total costs are calculated. Then calculate the total costs related to the information given in AS 2.2. (Instructors may wish to substitute data from their area.) (TM 2.3)

Q6. How can per-unit cost figures be used to make decisions?

A6. Per-unit cost figures are used because they reduce the values to equal units such as tons, acres, or bushels.

Ask students to discuss the importance of average variable cost (AVC), average fixed cost (AFC), and average total cost (ATC).

1) $AVC = \frac{TVC}{Q}$

2) $AFC = \frac{TFC}{Q}$

3) $ATC = \frac{TC}{Q}$

4) The per unit cost curves may be more important in decision making than the total cost curves.
   - a) The feed store operator wants the cost of purchasing, processing, handling, and storing a hundred-weight of feed stuffs to be less than the price the feed is expected to sell for.
   - b) The livestock or poultry feeder is interested in the cost per pound of grain.

5) In general, most producers are interested in having low per unit cost in relation to the units they are selling.

Q7. What is the difference between the short and long run?

A7. 1) The short run is a period during which certain inputs, or resources, are fixed and some are variable.
2) In the long run all resources are variable.

Ask students to discuss the influence of fixed and variable costs on the short and long run decisions. (TM 2.4)

1) Short run
   - a) Only those inputs considered to be variable may be changed.
     - (1) Livestock medicine
     - (2) Feed ingredients
     - (3) Number of hours worked
     - (4) Amount of gas used
   - b) Fixed resources cause the number of alternatives to be limited by being locked into certain uses.
   - c) Production will continue as long as variable costs are covered to minimize losses.

2) Long run - all resources are variable.
   - a) Amount of land
   - b) Size of business
   - c) Size and amount of equipment
   - d) Type of business
     - (1) Turkey hatchery may be converted into a feed mill.
     - (2) Cattle ranch may be converted into a dude ranch.

F. Other activities

1. It is suggested that an example, such as the operation of a small feed mill or a cash grain operation, be constructed by the students. Have students classify costs as fixed or variable, then calculate total cost (TC). The students should use the same example to plan the use of resources over a three-year period.

2. It is also suggested that you purchase and use a computer program by Hobar, "Vehicle Operating Analysis," which is available from Hobar Publications, 1234 Tiller Lane, St. Paul, MN 55112 or by calling 612/633-3170.

G. Conclusion

The manager should consider two types of costs. These costs have direct effects on business decisions. In the short run, these costs can be classified as fixed or variable. Variable costs are very important, because as long as managers can meet these costs, they will continue to operate. In the long run, all costs are variable and will have to be met for the business to succeed.

H. Competency

Determine the fixed and variable costs of production and use the fixed/variable concepts in making business decisions.

I. Answers to Evaluation

1. depreciation
   interest
   repairs
   taxes
   insurance
2. fixed
3. a,c,f,g
4. after it is planted
5. to minimize losses
6. before the item is purchased or in the long run
7. Depreciation/yr. = $1,063.00
   ($9,500 - $1,000 = $8,500/8 = $1,063)

   Interest on ave. Investment/yr. = $683.00
   ($9,500 + $1,000 = $10,500/2 = $5,250 x .13 = $638)

   Repairs/yr. = $250.00
   Total fixed costs/yr. = $1,996.00

   Fixed costs/acre = $6.65
   ($1,996/300 acre = $6.65)
   Labor/acre = $2.33
   Tractor's Fuel and Operation/acre = $1.00

   Variable costs per acre = $3.33/acre

   Total costs per acre = $9.98
   ($3.33 var. + $6.65 fixed = $9.98)

8. $6.00 - 3.33 variable = $2.67

   $1,996 fixed/year ÷ $2.67 = 748 acres per year

J. Answers to Assignment Sheets

AS 2.1: Classification of Costs

Expenses	Fixed Costs	Variable Costs
Inventory		X
Salaries		X
Payroll Expenses		X
Depreciation	X	
Interest	X	
Supplies		X
Advertising		X
Taxes	X	
Miscellaneous		X
Insurance	X	
Repairs	X	
Telephone		X
Utilities		X
Principal Payment		X
Gasoline and Oil		X

AS 2.2: Fixed and Variable Costs

FIXED COSTS:		GASOLINE	DIESEL
1.	Depreciation/yr.	1,346	1,589
2.	Interest on Ave. Investment/yr.	565	667
3.	Repairs/yr.	300	300
4.	Insurance/yr.	300	330
	TOTAL FIXED COST/YR.	2,511	2,886
OPERATING COSTS:			
1.	Fuel/mi.	.08	.0478
2.	Lubrication & Gen. Maint./mi.	.02	.03
	TOTAL OPERATING COST/MI.	.10	.0778

$$\frac{\text{Extra Fixed Costs}}{\text{Less Operating Costs}} = \frac{\$\,375/\text{year}}{\$.0222/\text{mile}} = 16{,}892 \text{ miles per year to justify diesel}$$

2. \$2,886 = .2886 (fixed cost/mi.)
+ .0778 (approximate variable cost/mi.)

\$ .3664 (total cost/mile)

NOTE: Refigure this problem using a salvage value that you think is reasonable for a 7-year-old pickup.

NOTE: This problem considers economic depreciation only.

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE Name ___________

Lesson 2: Fixed and Variable Costs Date ___________

EVALUATION

1. List the five types of costs that are classified as fixed. (DIRTI Five)

   a.
   b.
   c.
   d.
   e.

2. Costs that remain constant regardless of the level of production are known as _____________ costs.

3. Which of the following may be changed during short-run planning?

   a. Advertising
   b. Depreciation
   c. Fuel
   d. Insurance
   e. Interest
   f. Salaries
   g. Seed
   h. Taxes (property)
   i. All of the above
   j. None of the above

4. Give an example of when seed corn is a fixed cost.

5. Why would it pay to operate if total costs are not covered?

6. Given an example of when depreciation is a variable cost.

Use the following situation to answer questions seven and eight.

A farmer is trying to decide whether or not to purchase a new haybine. He generally cuts and bales about 300 acres of hay per year. The haybine is going to cost $9,500. The farmer figures the practical life of the haybine to be about eight years and that it would only have a trade-in or salvage value of about $1,000 at the end of that time. Interest on average investment is figured to be about 13 percent. Repairs caused by age and weather are estimated by the dealer to be about $250 per year. He can haybine an average of 3 acres per hour. He figures the cost of his labor and variable tractor costs to be about $7 and $3 per hour respectively.

7. How much does it cost to operate the haybine per acre?

Economic Depreciation/year = ________

*Interest on ave. Investment/year = ________

Repairs caused by age and weather/year = ________

Total Fixed Costs per year = ________

Fixed Costs per acre = ________

Labor/acre = ________

Tractor/acre = ________

Total Variable costs per acre = ________

Total cost per acre = ________

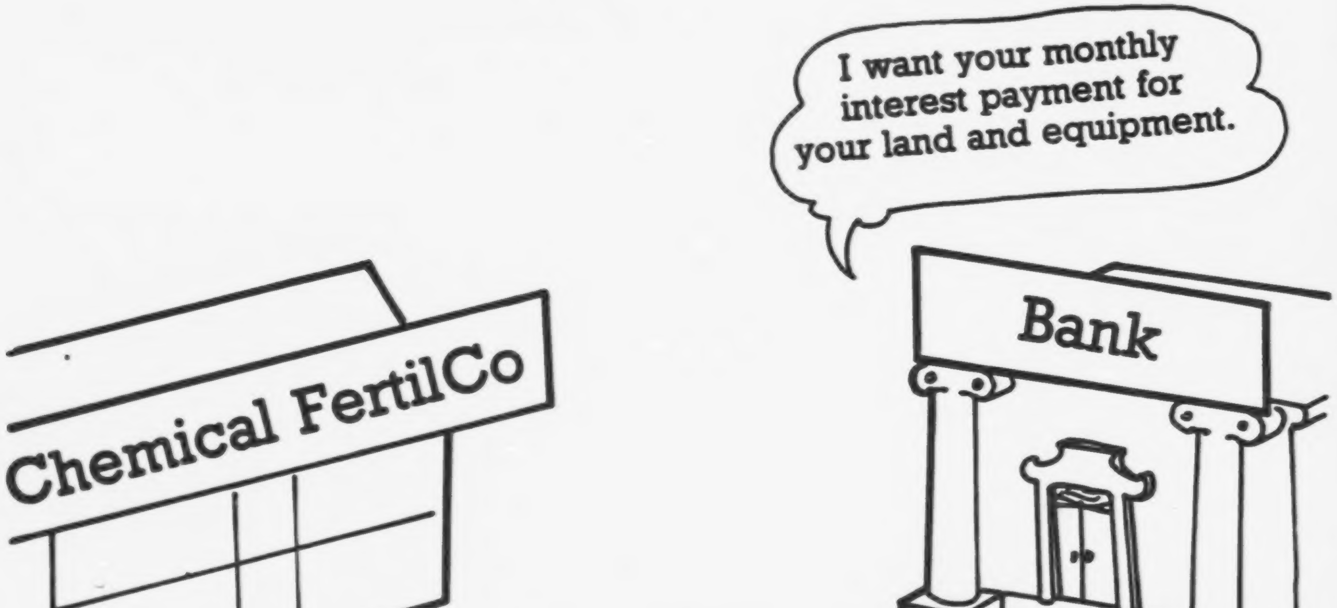
$$*\text{Average Investment} = \frac{\text{Purchase price + trade in value}}{2}$$

NOTE: This problem considers economic depreciation only.

8. How many acres would he have to use the haybine on to get the cost per acre down to $6? Assume fixed cost per year remains the same as above.

Fixed and Variable Costs

VARIABLE **FIXED**


I want your monthly interest payment for your land and equipment.
Bank
Chemical FertilCo
I'd like you to buy our new high-yield chemicals.

TM 2.2

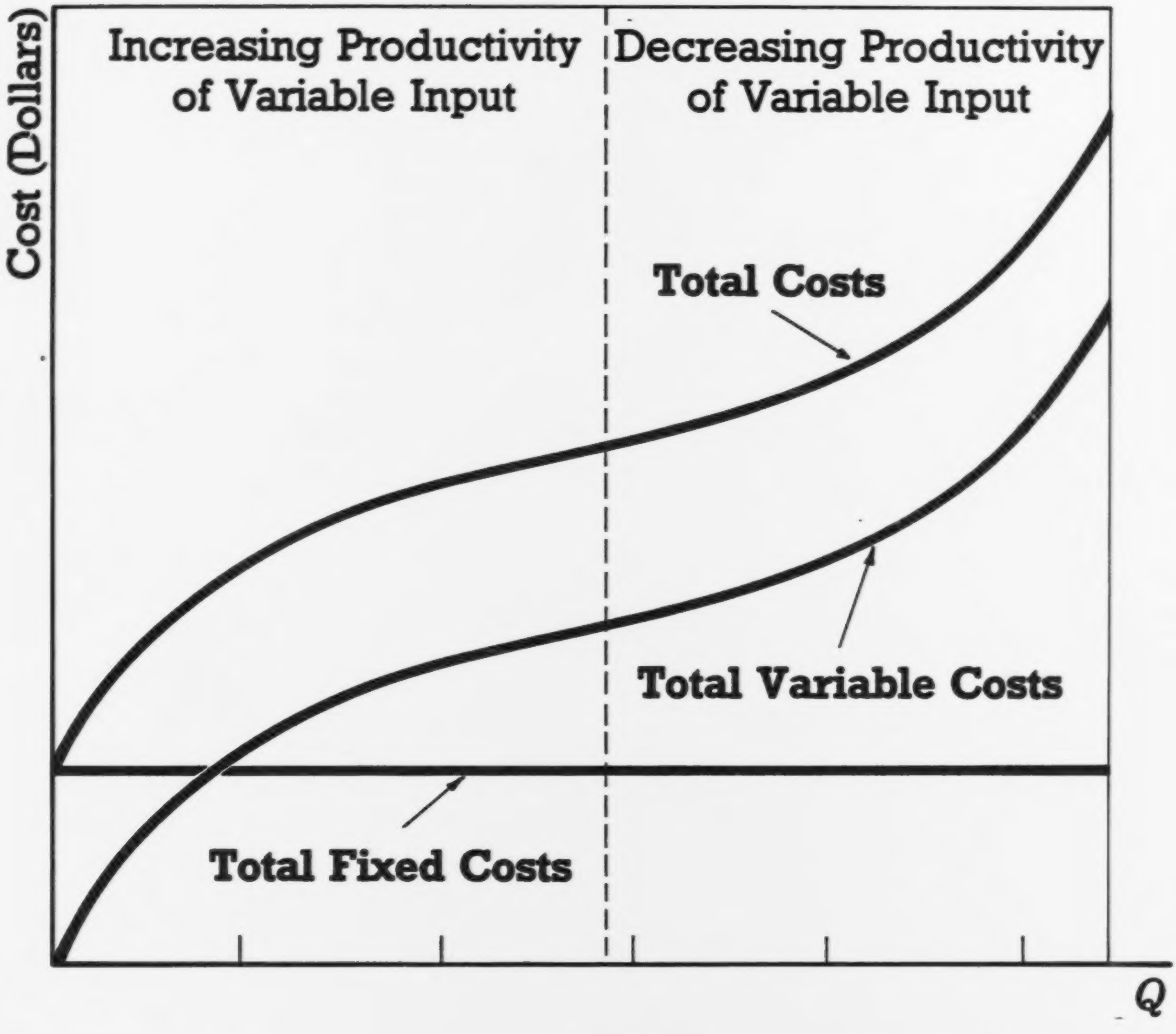
AS 2.1

Classification of Costs

Expenses	Fixed Cost	Variable Cost
Inventory		
Salaries		
Payroll Expenses		
Depreciation		
Interest		
Supplies		
Advertising		
Taxes		
Miscellaneous		
Insurance		
Repairs		
Telephone		
Utilities		
Principal Payment		
Gasoline and Oil		

Total Cost

Total cost, total variable cost, and total fixed cost curves



Source: Modern Agricultural Management

44

Time Relationships

Short Run ● ● ▶

There is insufficient time to vary amounts of fixed resources.

Long Run ● ● ● ● ● ● ● ● ● ▶

There is sufficient time to alter fixed resources to change output. In essence, these fixed resources become variable. All resources are variable in the long run.

FIXED/VARIABLE COSTS

Farmer John needs to buy a pickup and has heard people talking about the new diesel engines being offered as an option in light farm trucks. He does some checking with a local dealer and finds that the pickup with the options he needs sells for $9,422 with a gasoline engine and $11,122 with a diesel engine. Both pickups are expected to last seven years with no salvage value. Diesel fuel costs $1.10 per gallon and gasoline $1.20 per gallon. John figures it will probably stay in about that relationship. The gas pickup has an overall miles per gallon rating of 15 miles per gallon compared to 23 miles per gallon for the diesel. Insurance costs $150 every six months for the gas and $165 every six months for the diesel. The interest rate on average investment is estimated to be 12 percent. Fixed repairs are estimated at $300 per year for each pickup. Lubrication and general maintenance is estimated to be about 2¢ per mile on the gas and 3¢ per mile on the diesel.

1. How many miles must John drive in order to justify the diesel?

COST COMPARISON

FIXED COSTS:		GASOLINE	DIESEL
1.	Depreciation/yr.	______	______
2.	Interest on Ave. Investment/yr.	______	______
3.	Repairs/yr.	______	______
4.	Insurance/yr.	______	______
	TOTAL FIXED COST/YR.	______	______
OPERATING COSTS:			
1.	Fuel/mi.	______	______
2.	Lubrication & Gen. Maint./mi.	______	______
	TOTAL OPERATING COST/MI.	______	______

$\frac{\text{Extra Fixed Costs}}{\text{Less Operating Costs}} = \frac{\$\qquad/\text{year}}{\$\qquad/\text{mile}} = \_\_\_\_$ miles per year to justify diesel

2. If John buys the diesel pickup and drives it 10,000 miles per year, what is the total cost per mile?

Lesson 3: Substitution of Inputs

Objective: The student will be able to determine the most profitable amount of substitution for inputs and/or outputs in agricultural enterprises.

Study Questions

1. **What does substitution mean?**
2. **How is maximum profit determined?**
3. **Define the various methods of substitution.**
4. **How is the best rate of substitution calculated?**
5. **How is the best rate of substitution determined?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit I.
2. Handout
    a) HO 3.1: Substitution Equivalents for Feed
3. Assignment Sheets
    a) AS 3.1: Substituting Silage for Corn
    b) AS 3.2: Substituting Types of Advertising
    c) AS 3.3: Substitution of Hay for Corn in Steer Ration

Teacher References

1. Mortenson, W.P.; R.A. Luening. The Farm Management Handbook. 5th ed. Danville, IL: Interstate Publishers, 1972.
2. Baker, Richard L., ed. Profit-Maximizing Principles. Ohio State University, 1970.
3. Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.

4. Transparency Masters

   a) TM 3.1: Substitution Equivalents for Feed
   b) TM 3.2: Substituting Silage for Corn

Lesson 3: Substitution of Inputs

TEACHING PROCEDURES

A. Review

B. Motivation

Develop a situation appealing to students. An example could be a choice between two different candy bars. You may wish to bring a couple of candy bars to class and ask students which they would choose. Ask the students the following questions.

1. Which type of candy bar do you prefer?

2. If both cost 35¢, which would you buy?

3. If the one not chosen was reduced to 30¢, would you select it over the other one that is still 35¢?

   NOTE: If the students would still select their original choice, keep reducing the price of the unchosen candy bar.

4. If the price difference remains the same, will you continue to buy the cheaper candy bar each time?

C. Assignment

D. Supervised study

E. Discussion

Q1. **What does substitution mean?**

A1. **Substitution is replacing one input with another in an attempt to increase maximum profit.**

Ask students to discuss the meaning of substitution. (TM 3.1)

Q2. **How is maximum profit determined?**

A2. **Maximum profit is determined by the best combination of inputs which are organized in a way so that the manager can neither add nor subtract from the business without decreasing profit.**

Have the class discuss the meaning of "maximum profit."

Q3. Define the various methods of substitution.

A3. 1) Constant substitution - when one resource substitutes for another at the same rate for each additional unit of input

2) Variable substitution - when one resource substitutes for part of another at different rates for each additional unit of input

Ask students to discuss the two types of substitution and work through an example of each. An example of constant substitution would be corn for grain sorghum in a swine ration. An example of variable substitution would be the replacement of workers by machines in many businesses.

Q4. How is the best rate of substitution calculated?

A4. 1) Marginal Rate of Substitution (MRS) = $\frac{\text{Number of units replaced}}{\text{Number of units added}}$

2) Price ratio (PR) = $\frac{\text{Price of added units}}{\text{Price of replaced units}}$

(For outputs use net prices.)

3) Best rate of substitution

a) MRS = PR

b) $\frac{\text{Number of units replaced}}{\text{Number of units added}} = \frac{\text{Price of added units}}{\text{Price of replaced units}}$

Ask students to calculate the rate of substitution for several different enterprises. Use TM 3.2 and AS 3.1 to 3.3.

Q5. How is the best rate of substitution determined?

A5. The best level is where the marginal rate of substitution equals the price ratio.

F. Other activities

It is suggested that the instructor purchase the "Decision Making" computer program from Hobar Publications and allow students to use the program periodically. Also, refer students to HO 3.1 for additional study of substitution.

G. Conclusion

Substitution is desirable when a product can be produced with a higher profit due to the substitution of an input. The profitable level of substitution can be determined with the use of the substitution ratio and the price ratio.

H. Competency

Determine when substitution is desirable and what is the most profitable level of substitution.

I. Answers to Evaluation

1. c
2. b

3.

# Workers	#Workers Replaced	# Machines	#Machines Added	MRS	PR
30		0			
	10		2	10/2 = 5	3.0
20		2			
	5		2	5/2 = 2.5	3.0
15		4			
	3		2	3/2 = 1.5	3.0
12		6			

Price ratio = $\frac{1{,}200 \text{ for machine}}{400 \text{ for worker}} = 3.0$

The best level is with 2 machines because after that the price ratio will be larger than the marginal rate of substitution.

4. c
5. b

J. Answers to Assignment Sheets

AS 3.1:

Substituting Silage for Corn

Purchase 600-pound low-choice steers and feed to 1,050 pounds.

Ration	Pounds of Corn	Pounds of Corn Replaced	Pounds of Silage	Pounds of Silage Added	MRS	PR
A	1,950		1,200		XX	XX
		160		200	.80	.75
B	1,790		1,400			
		150		200	.75	.75
C	1,640		1,600			
		140		200	.70	.75
D	1,500		1,800			
		130		200	.65	.75
E	1,370		2,000			
		120		200	.60	.75
F	1,250		2,200			

Corn costs 4¢ per pound. Silage costs 3¢ per pound (dry basis).

Which ration would you feed? C

Why? MRS = PR, best possible level of substitution under these conditions

AS 3.2:

Substituting Types of Advertising

Combination	Minutes on Radio/Month	Minutes of Radio Time Replaced	Minutes on TV/Month	Minutes of TV Time Added	M R S	P R
A	715		5		xx	xx
B	505	210	10	5	42	12
C	355	150	15	5	30	12
D	250	105	20	5	21	12
E	175	75	25	5	15	12
F	120	55	30	5	11	12
G	80	40	35	5	8	12
H	50	30	40	5	6	12

No advertising will produce monthly sales of $10,000. Each advertising combination produces monthly sales of $30,000. Radio time costs $15/minute. TV time costs $180/minute.

Which combination of advertising will produce the highest returns for the business ? E

*Figures based on 1986 Advertising rates in Columbia, Missouri.

AS 3.3:

Substitution of Hay for Corn in Steer Ration

Goal: To maintain 2.2 pound daily gain

Ration	Pounds of Corn	Pounds of Corn Replaced	Pounds of Hay	Pounds of Hay Added	MRS	PR
A	800	70	250	50	xx	xx
B	730	55	300	50	1.4	.69
C	675	40	350	50	1.1	.69
D	635	30	400	50	.8	.69
E	605	25	450	50	.6	.69
F	580	20	500	50	.5	.69
G	560		550		.4	.69

Corn costs $2.24 per bushel. (4¢ per pound) Hay costs $55.00 per ton. (2.75¢ per pound)

Which Ration would you feed? D

Why? Closest point MRS ≥PR

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE Name ___________

Lesson 3: Substitution of Inputs Date ___________

EVALUATION

Circle the letter of the correct answer.

1. How many items may be substituted for a single input?

   a. Only one
   b. Very few
   c. Usually several, depending on what the input is
   d. None of the above

2. When is variable substitution used?

   a. When one unit of input will take the place of a set amount of another unit of input
   b. When one unit of input will take the place of different amounts of another input
   c. When prices are the same
   d. None of the above

3. You are the manager of a company and your job is to maximize profit. Workers for a certain job are paid $400 a week. A new machine can replace different numbers of workers. It costs $1,200 a week to own and operate. How many should you buy?________

# Workers	#Workers Replaced	# Machines	#Machines Added	MRS	PR
30		0			
	______		____	_____	________
20		2			
	______		____	_____	________
15		4			
	______		____	_____	________
12		6			

4. Purchasing a large piece of machinery in order to reduce the cost required to complete a particular operation is feasible if __________.

   a. The savings in labor is less than the cost of owning the larger machine
   b. There is sufficient capital available
   c. The cost of owning the larger machine is less than the savings in labor
   d. The savings in labor is equal to the cost of owning the larger machine

5. The reason for using the substitution principle in deciding upon the right combination of feed stuffs to use is __________.

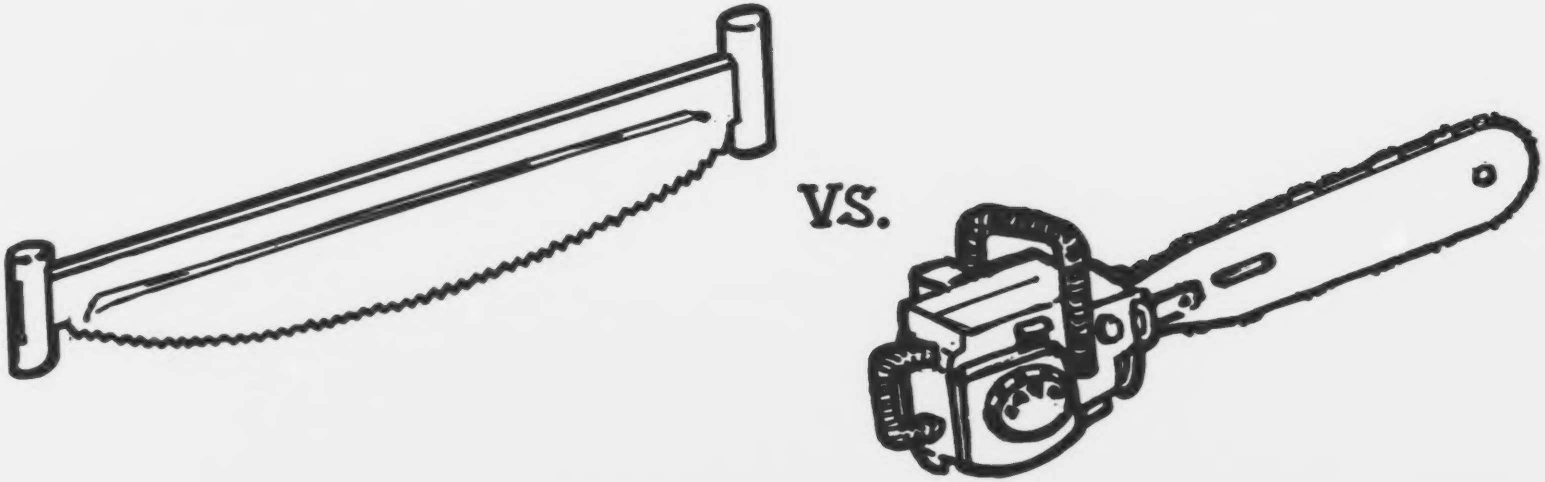
   a. To maximize cost
   b. To maximize profit
   c. To reduce fixed costs
   d. None of the above

Substitution Equivalents for Feeds

	Corn Eq/Bu
Corn	1.0
Oats	.5
Barley	.8
Grain sorghum	.9
Winter wheat	1.1
Millet	1.0
	Hay Eq/Ton
Hay	1.0
Haylage	.5
Hay estab. (direct)	1.0
Corn silage	.333
Oatlage	.5
Sorghum silage	.333
Stover	1.0
Other forage	1.0

Substitution

Crosscut Saw vs. Chainsaw



TM 3.1

Substituting Silage for Corn

Purchase 600-pound low-choice steers and feed to 1,050 pounds.

Ration	Pounds of Corn	Pounds of Corn Replaced	Pounds of Silage	Pounds of Silage Added	MRS	PR
A	1,950		1,200		x x x	x x x
B	1,790	______	1,400	______	____	____
C	1,640	______	1,600	______	____	____
D	1,500	______	1,800	______	____	____
E	1,370	______	2,000	______	____	____
F	1,250	______	2,200	______	____	____

Corn costs 4¢ per pound. Silage costs 3¢ per pound (dry basis).

Which ration would you feed? ______________________

Why? ______________________________

Substituting Types of Advertising

Combination	Minutes on Radio/Month	Minutes of Radio Time Replaced	Minutes on TV/Month	Minutes of TV Time Added	M R S	P R
A	715		5		x x x	x x x
B	505	______	10	______	—	—
C	355	______	15	______	—	—
D	250	______	20	______	—	—
E	175	______	25	______	—	—
F	120	______	30	______	—	—
G	80	______	35	______	—	—
H	50	______	40	______	—	—

No advertising will produce monthly sales of $10,000. Each advertising combination produces monthly sales of $30,000. Radio time costs $15/minute. TV time costs $180/minute.

Which combination of advertising will produce the highest returns for the business?______________________________

*Figures based on 1986 Advertising rates in Columbia, Missouri.

AS 3.3

Substitution of Hay for Corn in Steer Ration

Goal: To maintain 2.2 pound daily gain

Ration	Pounds of Corn	Pounds of Corn Replaced	Pounds of Hay	Pounds of Hay Added	MRS	PR
A	800		250		x x x	x x x
B	730		300			
C	675		350			
D	635		400			
E	605		450			
F	580		500			
G	560		550			

Corn costs $2.24 per bushel. (4¢ per pound) Hay costs $55.00 per ton. (2.75¢ per pound)

Which Ration would you feed? ____________________

Why? ____________________

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE

Lesson 4: Opportunity Costs

Objective: The student will be able to identify the opportunity cost of choosing one economic alternative over another.

Study Questions

1. **What are opportunity costs?**
2. **How are business decisions affected by opportunity costs?**
3. **What happens if the manager does not consider opportunity costs?**
4. **What measures can be used to represent opportunity costs?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987.
2. Assignment Sheets
    a) AS 4.1: SOE Program
    b) AS 4.2: Return on Investment for a Cooperative Store

Teacher References

1. Baker, Richard L., ed. Profit-Maximizing Principles. Ohio State University, 1970.
2. Schneeberger, Kenneth; Donald Osburn. Farm Management Manual. 2nd ed. Danville, IL: Interstate Printer and Publishers, 1978.
3. Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.
4. Transparency Masters
    a) TM 4.1: SOE Program
    b) TM 4.2: Return on Investment for a Cooperative Store

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE

Lesson 4: Opportunity Costs

TEACHING PROCEDURES

A. Review

B. Motivation

Place a dollar on the table. Ask students how they would spend that dollar. Make a list of the things they would do with it. Show them that once a decision is made on how to spend the dollar, the opportunity to spend it in another way is gone.

C. Assignment

D. Supervised study

E. Discussion

Q1. What are opportunity costs?

A1. Opportunity cost is the return that could be obtained if the resource were used in the next best alternative.

Ask the students to discuss opportunity costs and work through the examples in TMs 4.1, 4.2 and ASs 4.1, 4.2.

1) Opportunity
    a) A potential method of increasing income
    b) A chance for betterment
2) Cost
    a) The value paid for an item
    b) The amount given up for the use of something
3) Opportunity cost for a business is the return that could be obtained if a resource were used in the next best opportunity.

Q2. How are business decisions affected by opportunity costs?

A2. All business decisions involve limited resources, which are land, labor, and capital. (Capital includes money and machinery.) Each business must find the right mixture of these resources to continue earning a profit.

Ask students to discuss what decisions would be affected by opportunity costs. Determining the right decisions is affected by opportunity costs.

Q3. **What happens if the manager does not consider opportunity costs?**

A3. **If the manager fails to consider opportunity costs of a decision, that manager may be missing an opportunity to break even or make a greater profit.**

Ask students to discuss what will happen if they do not consider opportunity costs.

Q4. **What measures can be used to represent opportunity costs?**

A4. 1) **Rate of return on investment is used.**
2) **Net return is used.**

Ask students to discuss what factors can be used to represent opportunity costs. The rate of return on investment is used when resources are limited and when the opportunities available require different amounts of investment. Net return is used when resources are not a constraint and when the opportunities available require the same amount of investment.

F. Other activities

Students can calculate the opportunity costs of several alternatives in Missouri Farm Planning Handbook (Manual 75).

G. Conclusion

All decisions have some costs associated with them, and the opportunity costs for making those decisions need to be considered. Opportunity cost is the return that could be obtained if a resource were used in the next best alternative. The rate of return on investment is a good indicator of which alternative is the best choice. All decisions that involve the use of scarce resources are affected by opportunity costs.

H. Competency

Determine the opportunity cost of choosing various business alternatives.

I. Answers to Evaluation

1. b
2. a
3. c
4. c $2,950
5. land, labor, and capital
6. The opportunity cost for a business is the return that could be obtained if a resource were used in the next best alternative.

J. Answers to Assignment Sheets

AS 4.1:

corn	$ 92
soybeans	$100
wheat	$100
alfalfa	$100
pasture	$100

AS 4.2:

Return on Investment for a Cooperative Store

A cooperative dealer has a limited amount of money to stock the following options. Select the option that would be the most profitable by calculating the rate of return on the investment.

Options:	**A**	**B**	**C**
	16' metal tubing gate (pipe)	16' metal galvanized gate	16' wooden gate
Expense	$70.00	$45.00	$30.00
Return	$80.00	$70.00	$40.00
Net Return:	10.00	2500	10.00
Rate of Return on Investment:	14.28%	55.55%	33.33%

What is the best option for purchasing farm gates for resale? B

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE Name ____________

Lesson 4: Opportunity Costs Date ____________

EVALUATION

Circle the letter of the best answer.

1. Which of the following measures can be used to represent opportunity costs when resources are limited?

   a. Net return
   b. Rate of return on investment
   c. Total return
   d. Total expense

2. Which of the following values could be an opportunity cost?

   a. $2,000 net return from steer operation that was not selected
   b. $1,500 total return from an alternative that was not selected
   c. $200 expense for supplies in an alternative that was not selected
   d. $1.25 rate of return on investment for the alternative selected

3. Opportunity costs are included in which of the following?

   a. Cash costs
   b. Expenses
   c. Noncash costs
   d. Returns

4. What would be the opportunity cost for selecting Option D if all options required a $1750 investment? ____________________

   Option A: $2,000 net return
   Option B: $2,336 net return
   Option C: $2,950 net return
   Option D: $3,000 net return

Complete the following short answer questions.

5. List three limited resources that a manager must try to allocate to the best alternatives.

   a.
   b.
   c.

6. Define opportunity costs.

SOE Program

John has rented ten acres from his father for his SOE program and has to decide what to plant. He thinks he can get the following net returns.

Corn	$100/acre
Soybean	$ 92/acre
Wheat	$ 60/acre
Alfalfa	$ 35/acre
Fescue for Pasture	$ 15/acre

What is the opportunity cost of the land if John plants:

Corn?	________
Soybeans?	________
Wheat?	________
Alfalfa?	________
Pasture?	________

Source: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

TM 4.2

AS 4.2

Return on Investment for a Cooperative Store

A cooperative dealer has a limited amount of money to stock the following options. Select the option that would be the most profitable by calculating the rate of return on the investment.

Options:	**A**	**B**	**C**
	16' metal tubing gate (pipe)	16' metal galvanized gate	16' wooden gate
Expense	$70.00	$45.00	$30.00
Return	$80.00	$70.00	$40.00
Net Return:	____________	____________	____________
Rate of Return on Investment:	____________	____________	____________

What is the best option for purchasing farm gates for resale? ______________________________

Lesson 5: Supply and Demand

Objective: The student will determine how supply and demand interact to determine the price of agricultural commodities.

Study Questions

1. **Explain the difference between demand and quantity demanded.**
2. **Explain the difference between supply and quantity supplied.**
3. **What determines price?**
4. **Define the Law of Demand and show how it can be illustrated.**
5. **What factors may shift the demand curve?**
6. **Define the Law of Supply and show how it can be illustrated.**
7. **What factors may shift the supply curve?**
8. **What is the point of equilibrium?**
9. **Define elasticity and the three types of elasticity.**
10. **What are the two basic types of goods demanded by a consumer?**

(Optional)

11. **How are demand price elasticity and supply price elasticity calculated?**
12. **What is the importance of determining the demand or supply price elasticity?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit I.
2. Handout
    - a) HO 5.1: Sources of Supply and Demand Information
3. Assignment Sheet
    - a) AS 5.1: Supply and Demand Curves

Teacher References

1. Steward, Jim; Raleigh Jobes. Farm and Ranch Business Management. Moline, IL: Deere and Company, 1985.

2. Agricultural Marketing Principles. Ohio State University, 1972.

3. Transparency Masters

    a) TM 5.1: What Controls Markets?
    b) TM 5.2: Shifts in Demand
    c) TM 5.3: Shifts in Supply
    d) TM 5.4: Blank Graph
    e) TM 5.5: Supply Price Elasticity
    f) TM 5.6: Demand Price Elasticity

Lesson 5: Supply and Demand

TEACHING PROCEDURES

A. Review

B. Motivation

Develop a situation appealing to students considering their backgrounds and experience. An example that may be used would be to purchase some softdrinks, preferably enough for the whole class. Bring the soft drinks to class and place them in a closed container before students arrive so they will not be aware of the quantity that you have. Pull the first can out and auction it off to the highest bidder. Have them wait before drinking it. Next, auction off another can to the highest bidder with the same stipulation. Finally pull the rest of the cans out and try to obtain the highest price for each can sold. Record all prices and quantities on the board. Return the money to the students.

NOTE: It is suggested that the instructor check with the principal concerning school policy before using the above example. Chewing gum or candy may be used instead of soft drinks.

C. Assignment

D. Supervised study

E. Discussion

Q1. Explain the difference between demand and quantity demanded.

A1. **Demand for a product or commodity is the amount that buyers are willing and able to purchase at different prices and at a given time and place. Quantity demanded is how much buyers are willing to buy at each specific price.**

Have students discuss the meaning of demand vs. quantity demanded.

Q2. Explain the difference between supply and quantity supplied.

A2. **Supply is the amount of product or commodity that producers are willing and able to provide at different prices and a given time and place. Quantity supplied is how much suppliers are willing and able to provide at each specific price.**

Have students discuss the meaning of supply vs. quantity supplied.

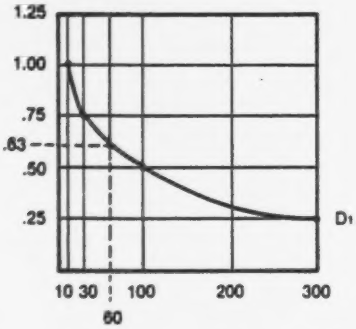
Q3. What determines price?

A3. Price is the result of the interaction of the forces of supply and demand.
1) If demand increases without a change in supply, the price will go up.
2) If supply increases without a change in demand, the price will drop.

Ask students to discuss how price is determined. (TM 5.1) Have students discuss what happens if either demand or supply changes with the other being held constant, emphasize effect on price.

Q4. Define the Law of Demand and show how it can be illustrated.

A4. 1) The Law of Demand states that when the price of a product is increased with no change in factors other than price, less product will be purchased. Also, when the price falls, more product will be purchased.
2) The Law of Demand can be illustrated by a demand schedule and demand curve as follows:



Ask students to discuss the Law of Demand and graph some sample demand curves.

Q5. What factors may shift the demand curve?

A5.
1) **Consumer income - per capita income**
2) **Population - number of consumers**
3) **Individual taste**
4) **Competing products**
   a) **Price**
   b) **Taste**
5) **Consumers' expectations**
6) **Advertising/promotions**

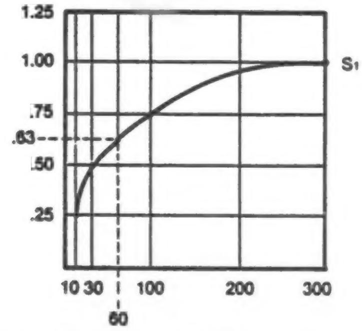
Ask students to discuss the factors that may cause the demand curve to shift. (TM 5.2)

1) If the initial demand for barbed wire is D_2, the quantity demanded would be Q_2, and price would be P_2.
2) If demand shifted to D_3, quantity equals Q_3, and price = P_3.
3) If demand shifts to D_1, quantity equals Q_1 and price = P_1.

Q6. Define the Law of Supply and show how it can be illustrated.

A6. 1) **The Law of Supply states that when the price of a product is lowered, assuming there is no change in factors other than price, less of the product will be supplied. Also, when the price increases, more of the product will be supplied.**

2) **The law of supply can be illustrated by the following supply curve.**



Ask students to discuss the Law of Supply and graph some sample supply curves using TMs 5.2, 5.3 and AS 5.1.

Q7. What factors may shift the supply curve?

A7.

1) **Suppliers' expectations**
2) **Natural forces**
   a) **Flood**
   b) **Drought**
3) **Availability of storage and perishability of the product**
4) **Change in price of other goods**
5) **Advancement in technology**
6) **Government programs**

Ask students to discuss the factors (supply shifters) that may cause the supply curve to shift. (TM 5.3)

1) If the initial supply for roller bearings is S_2, the quantity supplied would be Q_2, and the price would be P_2.
2) If supply shifts to S_1, quantity equals Q_1, and price equals P_1.
3) If supply shifts to S_3, quantity equals Q_3, and price equals P_3.

Q8. What is the point of equilibrium?

A8. Equilibrium point is the point where the supply and demand curves cross.

Ask students to discuss the point of equilibrium and determine the market price and quantity using the graphs of supply and demand completed earlier. (AS 5.1. TM 5.4)

1) At this point price and quantity can be determined.
2) Equilibrium price
    a) Represented by the equilibrium point
    b) The price at which demand and supply are equal
3) If the price is too high
    a) Supply will be greater than demand.
    b) A surplus will develop.
4) If the price is too low
    a) Demand will be greater than supply.
    b) A shortage will result.
5) Market clearing

Q9. Define elasticity and the three types of elasticity.

A9. 1) **Elasticity is the measure of how sensitive the market is to changes in price or quantity.**
2) **The three types of elasticity are elastic, inelastic and unit elastic.**
    a) **Elastic - Change in price is less than the relative change in quantity.**
    b) **Inelastic - Change in price is greater than the relative change in quantity.**
    c) **Unit elastic - Change in price is equal to the change in quantity.**

Ask students to discuss the elasticity of a market.

1) A gap between supply and demand could be thought of as elastic.
2) The movement of the supply and demand can be measured as a percentage against the force that caused the movement.
3) The gap fluctuates due to several factors.
    a) Ability of products to substitute for each other
    b) Increases or decreases in supply
    c) Increases or decreases in demand
    d) Income changes in the population that buys the product
    e) Price increases or decreases demanded by buyers and sellers

Q10. What are the two basic types of goods demanded by a consumer?

A10. 1) **Luxury items - goods or services that are generally considered nonessential to the survival or well-being of an individual**

2) **Necessity items - goods or services that are generally considered essential to the survival or well-being of an individual**

Ask students to discuss the classification of items demanded by a consumer.

Q11. How are demand price elasticity and supply price elasticity calculated?

A11. 1) **Demand price elasticity** $= \frac{\text{\% change in quantity demanded}}{\text{\% change in price}}$
2) **Supply price elasticity** $= \frac{\text{\% change in quantity supplied}}{\text{\% change in price}}$

Ask students to discuss the elasticity of prices. (TM 5.5 - 5.6). Demand price elasticity is the amount of change in demand due to a certain change in price. Supply price elasticity is the amount of change in supply due to a certain change in price.

Q12. What is the importance of determining the demand or supply price elasticity?

A12. 1) **The demand price elasticity allows us to estimate how much price will change when the quantity supplied goes up or down.**

2) **The supply price elasticity allows us to estimate how much production will change when the price goes up or down.**

Calculate some demand or supply price elasticities. Ask the students how they would use these numbers in making business decisions.

F. Other activites

It is suggested that several sources of current trends and facts be obtained to increase the students' awareness of the importance of supply and demand. Several references available from the Missouri Crop and Livestock Reporting Service are listed on HO 5.1.

G. Conclusion

The point where the supply and demand curves cross is known as the point of equilibrium. At this point the market price can be determined. This point is caused by the interaction of supply and demand, which is the amount sold or bought at a given price and at a given time and place. The items available on the market can be classified as either luxury or necessity items. The sensitivity of the market to change can be measured and is referred to as elasticity.

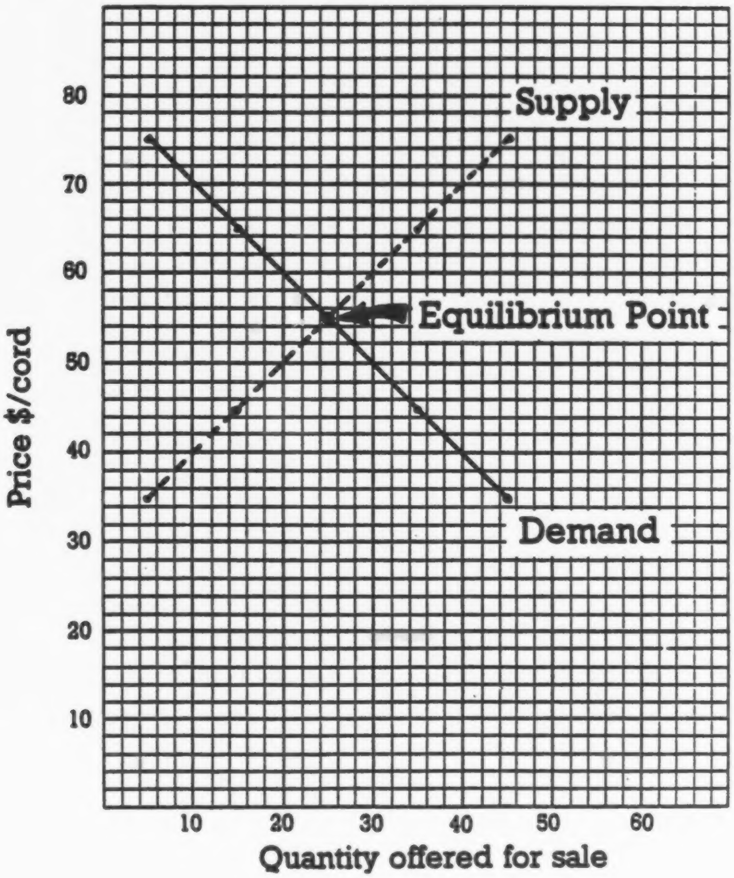
H. Competency

Determine the resulting change in price of commodities when shifts in supply and demand take place.

I. Answers to Evaluation

1.	d	10.	a
2.	d	11.	b
3.	c	12.	c
4.	d	13.	d
5.	a	14.	a
6.	c	15.	c
7.	b	16.	a
8.	b	17.	c
9.	a		

J. Answers to AS 5.1



76

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE Name ____________

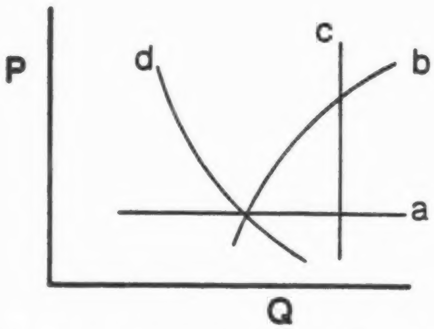
Lesson 5: Supply and Demand Date ____________

EVALUATION

Circle the letter of the best answer.

1. In the diagram shown below, the line which most closely represents a normal demand curve is line __________.

   a. a
   b. b
   c. c
   d. d



2. The price received for an agricultural commodity is determined by which of the following __________.

   a. Supply and unit elasticity
   b. Customer desires and preferences
   c. Demand and family income
   d. Quantity produced and the quantity consumed or purchased

3. If both demand and supply increased equally for an agricultural product, what will be the results on the quantity of the product sold and the price received?

   a. The same quantity will be sold at the same price.
   b. An increased quantity will be sold at a lower price.
   c. An increased quantity will be sold at the same price.
   d. An increased quantity will be sold at a higher price.

4. The higher the price of milk, all other things being equal, the quantity consumed __________.

   a. Will increase
   b. Will decrease
   c. Will not change
   d. Cannot be predicted from information given

5. When the change in price is greater than the relative change in quantity produced, an agricultural commodity is said to be __________.

   a. Inelastic
   b. Elastic
   c. Unitary elastic
   d. Necessity

6. Successful advertising increases demand, thus the demand curve for the product advertised would be __________.

   a. Unchanged, but more would be sold at a lower price
   b. Unchanged, but less would be sold at a higher price
   c. Shifted to the right
   d. Shifted to the left

7. An increase in the supply of an agricultural commodity results in a shift of the supply curve __________.

   a. Downward to the left
   b. Downward to the right
   c. Upward to the left
   d. Upward to the right

8. The amount or quantity of an agricultural product available for sale at a given price and at a specific place and time is called __________.

   a. Demand
   b. Supply
   c. Market
   d. Utility

9. Relative to demand, most basic agricultural products tend to be __________.

   a. Inelastic
   b. Elastic
   c. Unitary
   d. None of the above

10. What happens to the equilibrium price of a commodity when the supply increases and the demand increases?

   a. It stays the same.
   b. It becomes lower.
   c. It becomes higher.
   d. There is not sufficient information available to predict.

11. ________________ is how responsive the amount of an agricultural product produced or consumed would be to a change in price.

   a. Price
   b. Elasticity
   c. Consumption
   d. Supply

12. As price of an agricultural product increases, the supply __________.

   a. Decreases
   b. Equalizes
   c. Increases
   d. Remains unchanged

13. ______________ is a set of various prices and corresponding quantities of a particular agricultural commodity that would be purchased at each price.

a. A supply schedule
b. An elasticity schedule
c. A quantity schedule
d. A demand schedule

14. The amount or quantity of a good or service that would be purchased at a given price and at a specific time and place is called __________.

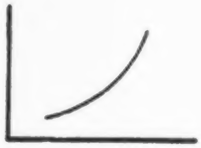
a. Demand
b. Supply
c. Market
d. Utility

15. The equilibrium price of an agricultural product is the point where ________.

a. Demand and price are constant
b. Production is stable at a given price
c. Production (supply) is equal to consumption (demand)
d. Selling price equals purchasing price

16. The diagram shown below represents which of the following curves?

a. A supply curve
b. An equilibrium curve
c. A demand curve
d. A unit elasticity curve



17. The equilibrium price of an agricultural commodity, at a particular point in time, can be determined by using __________.

a. The demand schedule
b. The supply schedule
c. Both the supply curve and the demand curve
d. Both the demand schedule and the demand curve

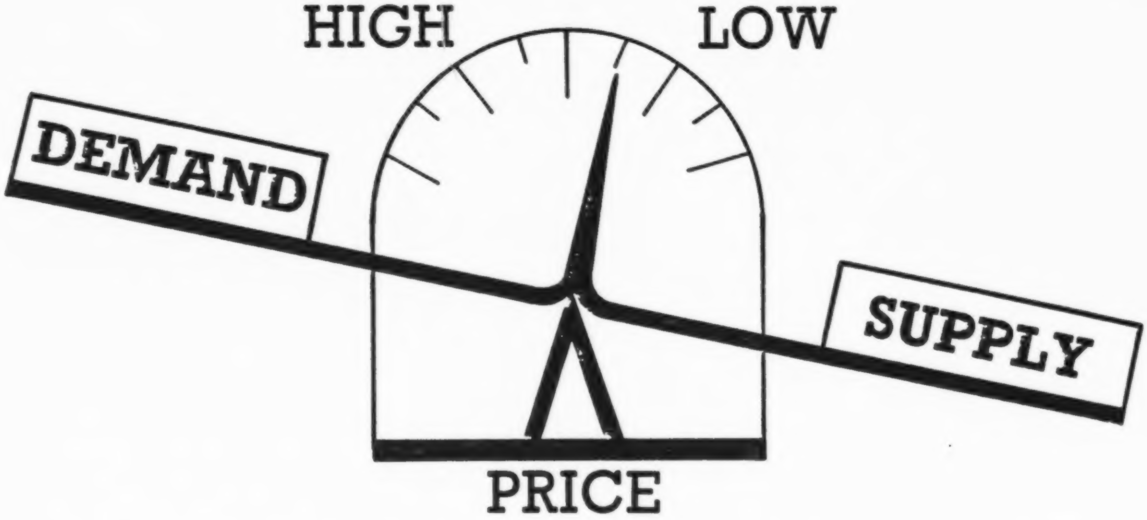
SOURCES OF SUPPLY AND DEMAND INFORMATION

The following items are available from the Missouri Crop and Livestock Reporting Service (Missouri Department of Agriculture, P.O. Box L, Columbia, MO 65201):

- Bi-weekly Crop & Livestock Reporter - contains prices, livestock, dairy and poultry production, crop production, farm labor information, special items of current interest; published about the 10th and 25th of each month
- Annual Crop Summary and Crop Values
- Weekly Weather and Crop Report - published monthly in winter
- County Estimates - contains corn, wheat, cotton, soybeans, sorghum, oats, hay
- County Agri-Facts
- Farm Facts, Annual - contains a summary of crop and livestock statistics for Missouri, including county estimates of livestock and major crops

TM 5.1

What Controls Markets?


HIGH
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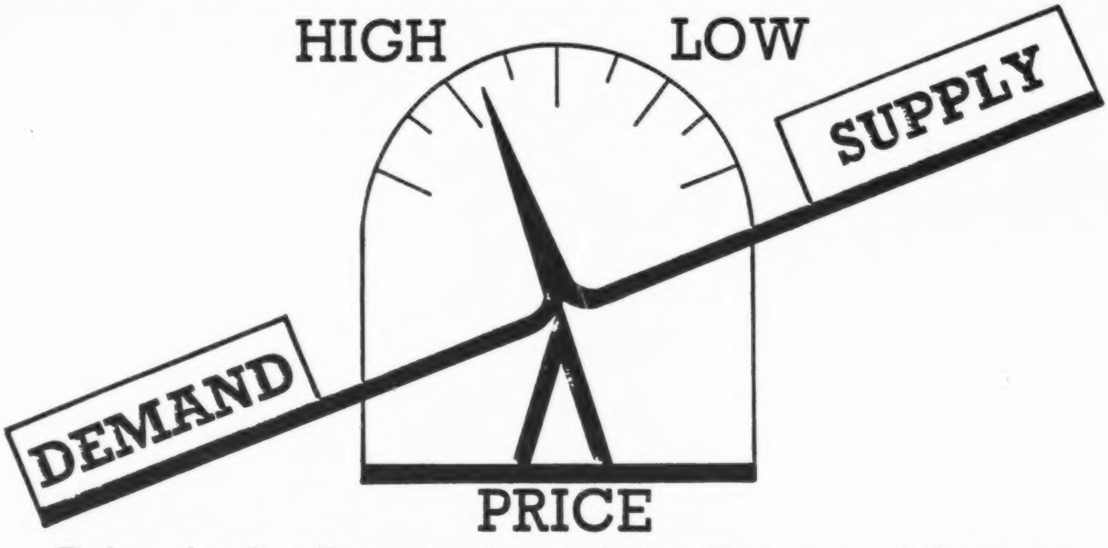

HIGH
LOW
SUPPLY
DEMAND
PRICE

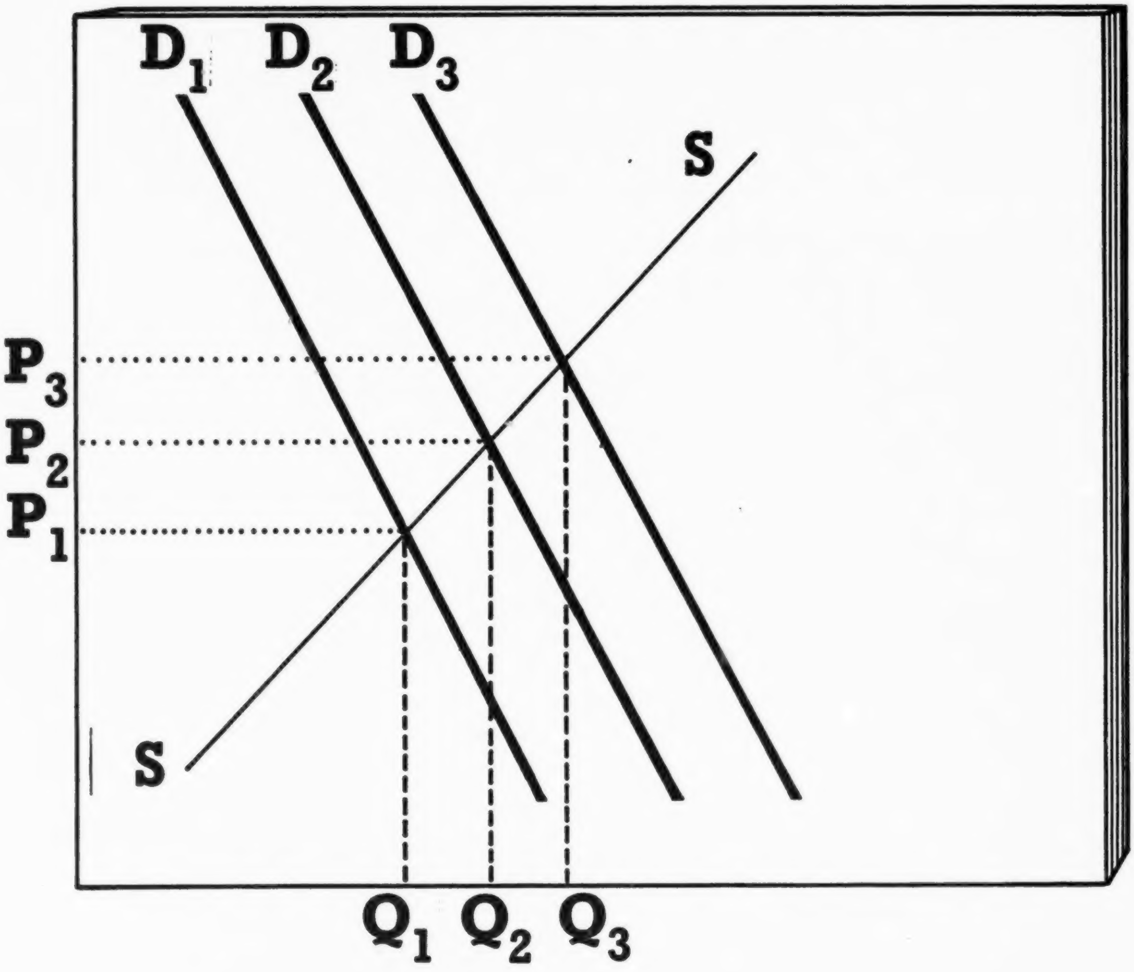
Price is the Interaction of the Forces of Supply and Demand.

When Supply is Heavy, the Price goes Down.

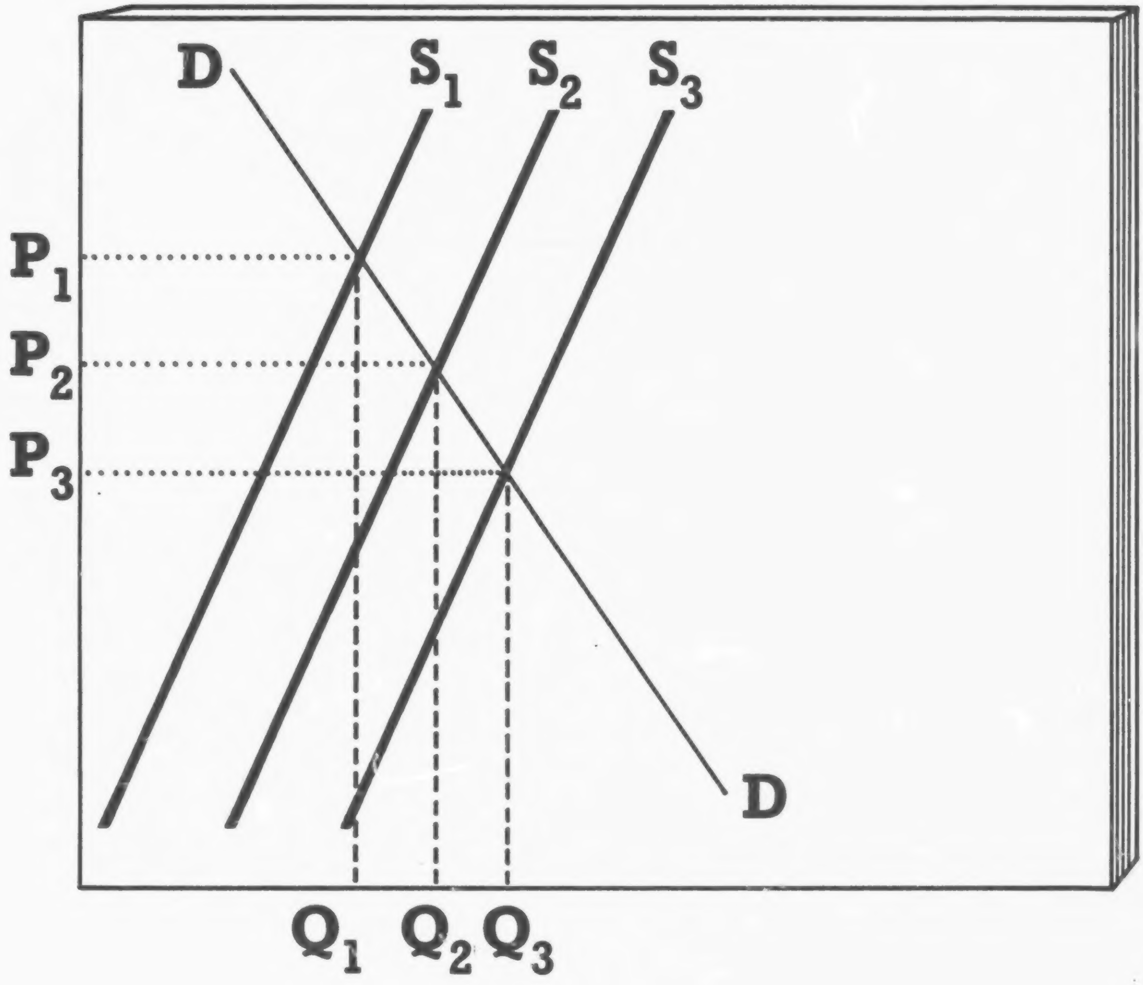
When Demand is Heavy, the Price goes Up.

Source: Profitable Farm Management, Hamilton and Bryant

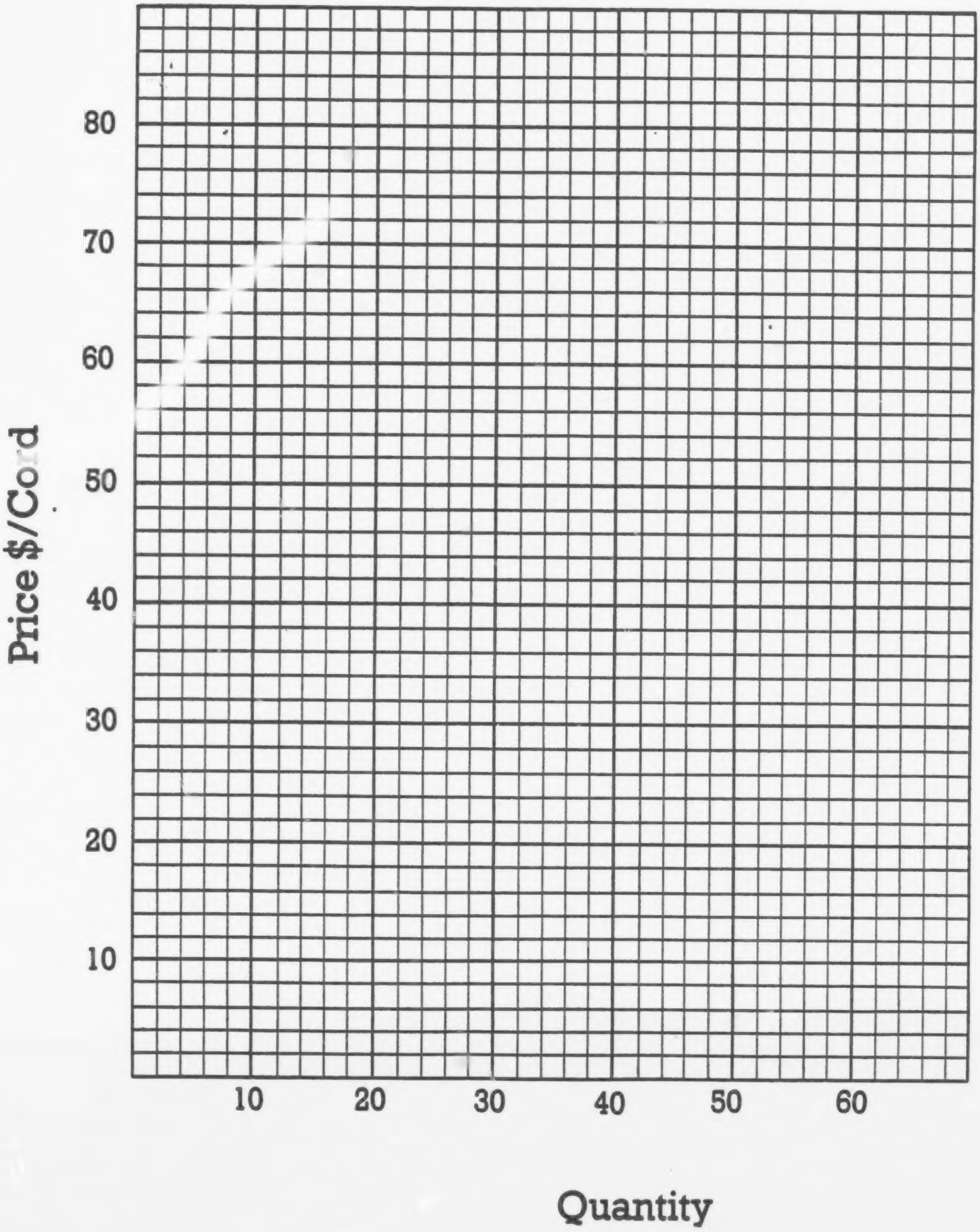
Shifts in Demand



Shifts in Supply



Blank Graph



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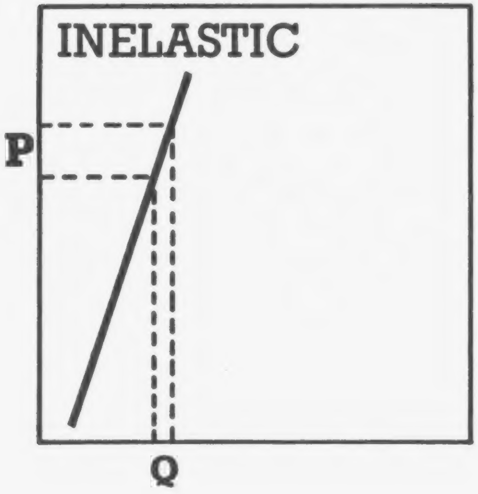
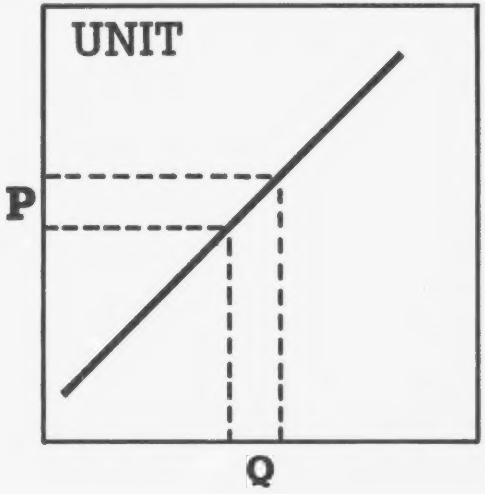
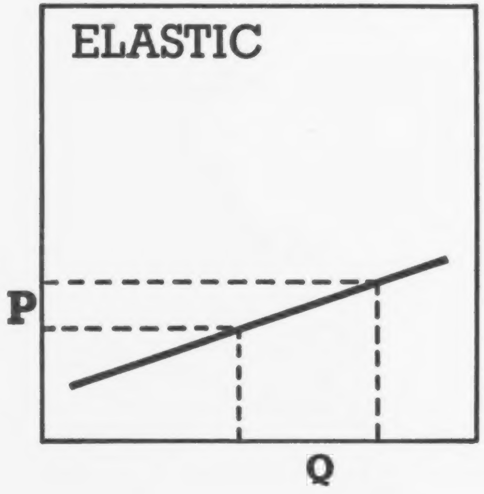
Supply Price Elasticity





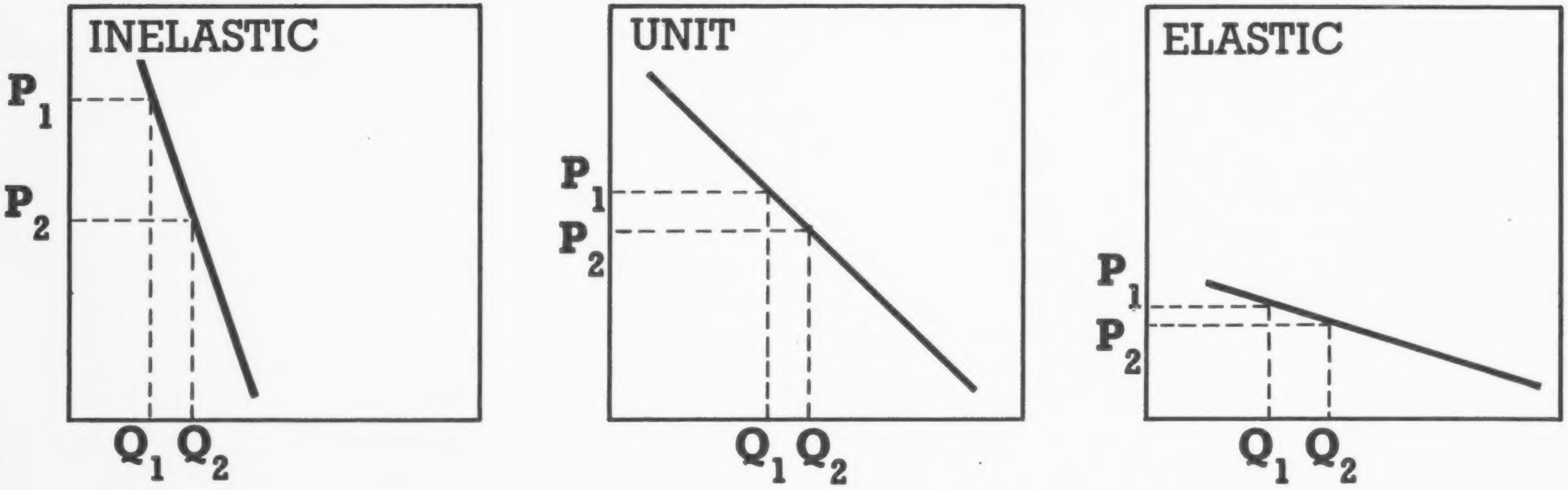


Inelastic - Change in price is **greater** than the relative change in quantity provided.

Unit - Change in price is **equal** to the relative change in quantity provided.

Elastic - Change in price is **less** than the relative change in quantity provided.

Demand Price Elasticity



Inelastic - Change in price is **greater** than the relative change in quantity purchased?

Unit - Change in price is **equal** to the relative change in quantity purchased?

Elastic - Change in price is **less** than the relative change in quantity purchased?

Supply and Demand Curves

Supply of Firewood

Price/Cord	Cords offered for sale
75	45
65	35
55	25
45	15
35	5

Demand for Firewood

Price/Cord	Cords purchased
75	5
65	15
55	25
45	35
35	45

Graph the supply and demand curve on the blank graph TM 5.4.

Label each curve and the equilibrium point.

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE

Lesson 6: Time Value of Money

Objective: The student will be able to determine the effect that time has on the value of money.

Study Questions

1. **Why is it important to understand the time value of money?**
2. **What is the difference between compounding and discounting?**
3. **How does the manager decide what rate to use for compounding or discounting?**
4. **How are future values calculated?**
5. **What is the rule of 72?**
6. **What is an annuity?**
7. **What is the difference between future value and the future value of an annuity?**
8. **How are present values calculated?**
9. **What is the product when a number from the compounding table is multiplied by the corresponding number from the discounting table? Why?**
10. **What is the difference between the present value and the present value of an annuity?**
11. **What is an amortization table?**
12. **What is feasibility?**
13. **How is the index of profitability used?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit I.
2. Handouts

   a) HO 6.1: Future Value at Compound Interest
   b) HO 6.2: Future Value of Annuity of 1
   c) HO 6.3: Present Value of 1
   d) HO 6.4: Present Value of Annuity of 1
   e) HO 6.5: Annual Amortization Table

3. Assignment Sheets
    a) AS 6.1: Time Value of Money
    b) AS 6.2: Present Value
    c) AS 6.3: Amortization
    d) AS 6.4: Profitability

Teacher References

1. Steward, Jim; Raleigh Jobes. Farm and Ranch Business Management. Moline, IL: Deere and Company, 1985.

2. Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.

3. Farm Business Management Analysis. University of Missouri-Columbia: Instructional Materials Laboratory, 1984. Unit I.

4. Missouri Cooperative Extension Service Agricultural Guide
    a) G00450: How to Shop for Life Insurance

Lesson 6: Time Value of Money

TEACHING PROCEDURES

A. Review

B. Motivation

Tell the class that if they will give you $1,000 per year for ten years, you will then give them $1,000 per year for as long as they want to accept it. When they decide they want to stop, you will return their original $10,000. For example, at this rate of $1,000 per year for ten years, they will have put in $10,000. If they get the $1,000 per year returned for 30 years, they will receive $30,000 plus the original $10,000, or a total of $40,000.

You are safe as long as interest is at 8 percent or higher. You can take the $1,000 each year and place it in an interest-bearing account at a rate of 8 percent compounded annually. At the end of 10 years, you will have $14,487. (See HO 6.1). If you leave this in the account to earn 8 percent annual interest, you will receive $1,159 annually ($14,487 x .08 = $1,159) - of this you will send $1,000 each year to the investor and keep the $159 for your postage stamp and idea. When a student decides to quit, you would return his/her $10,000 and keep the extra $4,487 for your trouble.

C. Assignment

D. Supervised study

E. Discussion

Q1. **Why is it important to understand the time value of money?**

A1. **To be able to determine how the value of money is affected by time - a dollar today is worth more than a dollar a year from now.**

Ask students to discuss the importance of present or future values.

Q2. **What is the difference between compounding and discounting?**

A2. 1) **Compounding is the process of calculating future value. The interest earned during one period is added to the principal, in order to calculate the interest for the next period.**

2) **Discounting is the process of calculating the present value of something that will be received in the future. It is the opposite of compounding.**

Ask students to discuss the difference between compounding and discounting. Have students work a problem.

Q3. How does the manager decide what rate to use for compounding or discounting?

A3. **The manager should use rates that are actually available for alternative uses for the money.**

Ask students to discuss the interest rates that should be used for compounding or discounting. Work through problems 1 and 2 on AS 6.1.

Q4. How are future values calculated?

A4. **1) By using factors from the compounding table**
2) Future value = $(1 + i)^n$

Ask students to work through the remaining problems on AS 1. Point out that money has a time value. In other words, a dollar in the hand today is worth more than a dollar to be received sometime in the future. The basic reason is that the dollar received today could be put to work to earn more money.

Distribute HO 6.1. Point out that HO 6.1 is a compounding table. As an example, if $1 is placed in a savings account and left for 10 years at 10 percent compounded interest, there would be $2.59 in the account. How can this be used?

Q5. What is the rule of 72?

A5. **The rule of 72 states that if 72 is divided by the compounding rate, the resulting number will be the number of years that it takes for the sum of money to double.**

Ask students to discuss the the rule of 72 and work through problems 3 and 4 on AS 6.1. For example, at 12 percent it will double in six years; at 10 percent it will double in 7.2 years, and at 6 percent it will double in 12 years.

Q6. What is an annuity?

A6. **1) A constant sum of money to be received or paid on a regular basis for a period of years**
2) A constant annual payment

Ask students to discuss the meaning of an annuity.

Q7. What is the difference between future value and the future value of an annuity?

A7. **Future value is what something will be worth at some point in the future. The future value of an annuity is the value at some point in the future of a stream of payments to be received each year for several years.**

See HO 6.2: Future Value of an Annuity Table.

Q8. How are present values calculated?

A8. 1) **By using the discounting table**
2) **Present value** = $\frac{1}{(1 + i)^n}$

Ask students to work through the examples on AS 6.2.

1) Explain that the concept of present value is the opposite of future value. With future values we knew the value today and determined the value sometime in the future. With the present value concept we know the returns we expect in the future and use this concept to determine the value at the present time.

2) Distribute copies of HO 6.3. This is a present value table that tells us the value at the present time of $1 received in the future at different interest rates. As an example, if we will receive $1 from an investment five years from now and interest is 8 percent, the value today is $.68. In other words, the most we would want to pay for an investment that will return $1 five years from now is $.68.

Q9. What is the product when a number from the compounding table is multiplied by the corresponding number from the discounting table? Why?

A9. **The answer is one, because compounding and discounting are opposite of each other. They are reciprocals of each other.**

Ask students to discuss the difference between the present value and future value tables. (HO 6.1 and HO 6.3) This shows that compounding is the opposite of discounting.

Q10. What is the difference between present value and the present value of an annuity?

A10. **Present value is what something to be received in the future is worth today. The present value of an annuity is the value of a stream of payments to be received each year for several years.**

Ask students to discuss the difference in the present or future value of $1 and the future or present value of an annuity. (HO 6.1, 6.2, 6.3 and 6.4)

Q11. What is an amortization table?

A11. **It is a table that calculates constant payments needed to repay both the principal and interest on a sum of money.**

Ask students to discuss the use of an amortization table and calculate the annual payments for various loans. (HO 6.5 and AS 6.3)

Q12. **What is feasibility?**

A12. **If an investment is feasible, it will generate enough cash flow to pay for itself.**

Discuss the meaning of feasibility. For example, land may be profitable over a period of time, but in the short run, if one can't make the payments for it, it would not be feasible.

Q13. **How is the index of profitability used?**

A13.
1) **The index of profitability allows a comparison of investments with alternative rates of return and lengths of life in order to select the most profitable alternative.**
2) **An index of profitability equal to or greater than one indicates a profitable alternative.**
3) **The investment with the highest index is the most profitable.**

Explain that using the index of profitability technique allows us to compare investments of alternative rates of return and lengths of life and to select the most profitable. As an example, if the present value of an investment is greater than its cost, it is profitable. If the present value of earnings from a $100 investment is $105, the index of profitability is 1.05 (105 / 100 = 1.05). When the index is 1.0 or over, it is profitable. The investment with the highest index is the most profitable.
(AS 6.4)

F. Other activities

If time is available, this would be a good point to invite someone in to talk about making investments. Another option might be to use the concept of time value of money to show how to develop a retirement plan.

G. Conclusion

The value of money is affected by time. Investments involving short time periods (less than one year) can be compared without using the concept of time value of money. Comparison between two investments should use present values. An investment must be feasible as well as profitable.

H. Competency

Determine the effects of the time value of money on business investments and decisions.

I. Answers to Evaluation

1. 29.361 x $1,250 = $36,701.25

2. 29.361 x $3,600 = $105,699.60

3. 7% - The present value of $1,000 to be received in 20 years at 7% is $258.40

4. 5.75% - 72/5.75 = 12.52 yrs
   8% - 72/8.0 = 9 yrs
   11.5% - 72/11.5 = 6.26 yrs
   16% - 72/16 = 4.5 yrs

5. a. The answer is yes, because the machine is paid for at the end of the fifth year and returns far outweigh the costs.

   b. The answer is no because the yearly return is not enough in early years to make payments for the cleaner.

6. a. 400 x 1.8009 = $720/acre

   b. She should invest the money in the land because the yearly income and inflation will outdo the 7% return on CD's

7. $88,000 x .1920 = $16,896 per year

J. Answers to Assignment Sheets

AS 6.1

1. $1,000 x 1.469 (HO 6.1) = $1,470

2. $100 x 14.974 (HO 6.1) = $1,497.40

3. 72/4 = 18 years

4. 72/16 = 4.5 years

AS 6.2

1. $20,000 x .4631 = $9,262 (HO 6.3)

   Because the $20,000 has a present value of only $9,262, the farmer would probably want to sell the trees for $13,000.

2. $400 x 2.58 = $1,032 (HO 6.4)

   With these assumptions, the farmer should pay the $1,000 now because the present value of $400 per year for three years at 8 percent is $1,032, or $32 more.

3. $6/hog x 1,250 hogs/year = $7,500 income over variable cost per year

   $7,500 x 7.5361 (from HO 6.4 with 12 years at 8 percent) = $56,520.75

   The $56,520.75 is the present value of the earnings for the next 12 years. Since this is more than the $50,000 cost of the feeding floor, it is profitable. Caution the group that these calculations don't mean this is the most profitable alternative nor does it indicate that it is feasible to be able to pay for it.

AS 6.3

1. $40,000 x .1490 = $5,960

2. $80,000 x .30 = $24,000 down payment

   $56,000 financed

   $56,000 x .1060 = $5936

AS 6.4

1. Value of land in 10 years

   $80,000 x 1.7908 = $143,264

2. Present value of that amount

   $143,264 x .4631 = $66,346

3. Present value of earnings (annuity)

   $6,000 x 6.7101 = $40,261

4. Present value of earnings = $ 40,261
   Present value of sale of farm = 66,346
   $106,607

   Profitability Index = $\frac{106,607}{80,000}$ = 1.33

UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE Name ________________

Lesson 6: Time Value of Money Date ________________

EVALUATION

Use the tables handed out during class to answer the following questions.

1. A young couple decides that it will be possible to set aside $1,200 per year for possible future use in building a home. If they can invest the money at a 9% interest rate compounded annually, how much money would they have at the end of 15 years?

2. How much would they have in 15 years if they could save $3,600 per year rather than $1,200?

3. Joyce can buy a zero-coupon bond that will mature in 20 years at a face value of $1,000. The cost of the bond is $258.40. What is the discount rate used to determine the present value of the bond?

4. How long does it take a given amount of money to double at the following annual interest rates?

   a. 5.75%
   b. 8%
   c. 11.5%
   d. 16%

5. Jack has the opportunity to add a seed cleaning operation to his general form supply business. The seed cleaner will cost $100,000 and will return $20,000 per year income over all cost except for the cost associated with buying the machine itself. In order to buy the cleaner he must make payments as follows:

	Principal	Interest	Total Payment
Year 1	$20,000	$10,000	$30,000
Year 2	$20,000	$ 8,000	$28,000
Year 3	$20,000	$ 6,000	$26,000
Year 4	$20,000	$ 4,000	$24,000
Year 5	$20,000	$ 2,000	$22,000
	$100,000		

a. If the seed cleaner has a useful life of 15 years, would this be a profitable investment?

b. Would it be a feasible investment?

6. Jill decides to buy some land as a hedge against inflation. She looks around and finds 100 acres for sale at $400 per acre. It is projected that the value of land will inflate at about 4% per year and that the general CD interest rate will be about 7% APR over the next 15 years. She figures the land will return about $2,000 per year income over all costs.

a. How much will she get per acre for the 100 acres if she sells it at the end of 15 years?

b. Considering the income and inflation, would she be better off to buy the land, or put the money into CD's and let the interest compound over the next 15 years? (other factors being equal)

7. Shawn has made an offer to buy a nursery-greenhouse business for $88,000. The present owner is willing to loan Shawn the money for 7 years at 8% interest. What will the annual principal and interest payment be if constant amortized payments are used to pay off the loan?

Future Value at Compound Interest

$FV = (1 + i)^n$

Year	4%	5%	6%	7%	8%	9%	10%	11%	12%
1	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200
2	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2321	1.2544
3	1.1248	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.3676	1.4049
4	1.1698	1.2155	1.2624	1.3107	1.3604	1.4115	1.4641	1.5180	1.5735
5	1.2166	1.2762	1.3382	1.4025	1.4693	1.5386	1.6105	1.6850	1.7623
6	1.2653	1.3400	1.4185	1.5007	1.5868	1.6771	1.7715	1.8704	1.9738
7	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.0761	2.2106
8	1.3685	1.4774	1.5938	1.7181	1.8509	1.9925	2.1435	2.3045	2.4759
9	1.4233	1.5513	1.6894	1.8384	1.9990	2.1718	2.3579	2.5580	2.7730
10	1.4802	1.6288	1.7908	1.9671	2.1589	2.3673	2.5937	2.8394	3.1058
11	1.5394	1.7103	1.8982	2.1048	2.3316	2.5804	2.8531	3.1517	3.4785
12	1.6010	1.7958	2.0121	2.2521	2.5181	2.8126	3.1384	3.4984	3.8959
13	1.6650	1.8856	2.1329	2.4098	2.7196	3.0658	3.4522	3.8832	4.3634
14	1.7316	1.9799	2.2609	2.5785	2.9371	3.3417	3.7974	4.3104	4.8871
15	1.8009	2.0789	2.3965	2.7590	3.1721	3.6424	4.1772	4.7845	5.4735
16	1.8729	2.1828	2.5403	2.9521	3.4259	3.9703	4.5949	5.3108	6.1303
17	1.9479	2.2920	2.6927	3.1588	3.7000	4.3276	5.0544	5.8950	6.8660
18	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5599	6.5435	7.6899
19	2.1068	2.5269	3.0255	3.6165	4.3157	5.1416	6.1159	7.2633	8.6127
20	2.1911	2.6532	3.2071	3.8696	4.6609	5.6044	6.7274	8.0623	9.6462
25	2.6658	3.3863	4.2918	5.4274	6.8484	8.6230	10.8347	13.5854	17.0000
30	3.2433	4.3219	5.7434	7.6122	10.0626	13.2676	17.4494	22.8922	29.9599
35	3.9460	5.5160	7.6860	10.6765	14.7853	20.4139	28.1024	38.5748	52.7996
40	4.8010	7.0399	10.2857	14.9744	21.7245	31.4094	45.2592	65.0008	93.0509

Year	13%	14%	15%	16%	17%	18%	19%	20%
1	1.1300	1.1400	1.1500	1.1600	1.1700	1.1800	1.1900	1.2000
2	1.2769	1.2996	1.3225	1.3456	1.3689	1.3924	1.4161	1.4400
3	1.4428	1.4815	1.5208	1.5608	1.6016	1.6430	1.6851	1.7280
4	1.6304	1.6889	1.7490	1.8106	1.8738	1.9387	2.0053	2.0736
5	1.8424	1.9254	2.0113	2.1003	2.1924	2.2877	2.3863	2.4883
6	2.0819	2.1949	2.3130	2.4363	2.5651	2.6995	2.8397	2.9859
7	2.3526	2.5022	2.6600	2.8262	3.0012	3.1854	3.3793	3.5831
8	2.6584	2.8525	3.0590	3.2784	3.5114	3.7588	4.0213	4.2998
9	3.0040	3.2519	3.5178	3.8029	4.1084	4.4354	4.7854	5.1597
10	3.3945	3.7072	4.0455	4.4114	4.8068	5.2338	5.6946	6.1917
11	3.8358	4.2262	4.6523	5.1172	5.6239	6.1759	6.7766	7.4300
12	4.3345	4.8179	5.3502	5.9360	6.5800	7.2875	8.0642	8.9161
13	4.8980	5.4924	6.1527	6.8857	7.6986	8.5993	9.5964	10.6993
14	5.5347	6.2613	7.0757	7.9875	9.0074	10.1472	11.4197	12.8391
15	6.2542	7.1379	8.1370	9.2655	10.5387	11.9737	13.5895	15.4070
16	7.0673	8.1372	9.3576	10.7480	12.3303	14.1290	16.1715	18.4884
17	7.9860	9.2764	10.7612	12.4676	14.4264	16.6722	19.2441	22.1861
18	9.0242	10.5751	12.3754	14.4625	16.8789	19.6732	22.9005	26.6233
19	10.1974	12.0556	14.2317	16.7765	19.7483	23.2144	27.2516	31.9479
20	11.5230	13.7434	16.3665	19.4607	23.1055	27.3930	32.4294	38.3375
25	21.2305	26.4619	32.9189	40.8742	50.6578	62.6686	77.3880	95.3962
30	39.1158	50.9501	66.2117	85.8498	111.0646	143.3706	184.6752	237.3762
35	72.0685	98.1001	133.1755	180.3140	243.5034	327.9972	440.7005	590.6681
40	132.7815	188.8834	267.8635	378.7211	533.8686	750.3782	1051.6674	1469.7713

Future Value of a Uniform Series of Annuity of $1

$$V_N = \$1\left[\frac{(1+i)^N - 1}{i}\right] = USFV_{i,N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.005	2.010	2.015	2.020	2.025	2.030	2.035	2.040	2.050	2.060
3	3.015	3.030	3.045	3.060	3.076	3.091	3.106	3.122	3.152	3.184
4	4.030	4.060	4.091	4.122	4.153	4.184	4.214	4.246	4.310	4.375
5	5.050	5.101	5.152	5.204	5.256	5.309	5.362	5.416	5.526	5.637
6	6.076	6.152	6.230	6.308	6.388	6.468	6.550	6.633	6.802	6.975
7	7.106	7.214	7.323	7.434	7.547	7.662	7.779	7.898	8.142	8.394
8	8.141	8.286	8.432	8.583	8.736	8.892	9.052	9.214	9.549	9.897
9	9.182	9.369	9.559	9.755	9.955	10.159	10.368	10.583	11.027	11.491
10	10.228	10.462	10.703	10.950	11.203	11.464	11.731	12.006	12.578	13.181
11	11.279	11.567	11.863	12.169	12.483	12.808	13.142	13.486	14.207	14.972
12	12.336	12.683	13.041	13.412	13.796	14.192	14.602	15.026	15.917	16.870
13	13.397	13.809	14.237	14.680	15.140	15.618	16.113	16.627	17.713	18.882
14	14.464	14.947	15.450	15.974	16.519	17.086	17.677	18.292	19.599	21.051
15	15.537	16.097	16.682	17.293	17.932	18.599	19.296	20.024	21.579	23.276
16	16.614	17.258	17.932	18.639	19.380	20.157	20.971	21.825	23.657	25.673
17	17.697	18.430	19.201	20.012	20.865	21.762	22.705	23.698	25.840	28.213
18	18.786	19.615	20.489	21.412	22.386	23.414	24.500	25.645	28.132	30.906
19	19.880	20.811	21.797	22.841	23.946	25.117	26.357	27.671	30.539	33.760
20	20.979	22.019	23.124	24.297	25.545	26.870	28.280	29.778	33.066	36.786
25	26.559	28.243	30.063	32.030	34.158	36.459	38.950	41.646	47.727	54.865
30	32.280	34.785	37.539	40.568	43.903	47.575	51.663	56.085	66.439	79.058
40	44.159	48.886	54.268	60.402	67.403	75.401	84.550	95.026	120.800	154.762
50	56.645	64.463	73.683	84.579	97.484	112.797	130.998	152.667	209.348	290.336

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.070	2.080	2.090	2.100	2.120	2.140	2.160	2.200	2.250
3	3.215	3.246	3.278	3.310	3.374	3.440	3.506	3.640	3.813
4	4.440	4.506	4.573	4.641	4.779	4.921	5.066	5.368	5.766
5	5.751	5.867	5.985	6.105	6.353	6.610	6.877	7.442	8.207
6	7.153	7.336	7.523	7.716	8.115	8.536	8.977	9.930	11.259
7	8.654	8.923	9.200	9.487	10.089	10.730	11.414	12.916	15.073
8	10.260	10.637	11.028	11.436	12.300	11.233	14.240	16.499	19.842
9	11.978	12.488	13.021	13.579	14.776	16.085	17.518	20.799	25.802
10	13.816	14.487	15.193	15.937	17.549	19.337	21.321	25.959	33.253
11	15.784	16.645	17.560	18.531	20.655	23.045	25.733	32.150	42.566
12	17.888	18.977	20.141	21.384	24.133	27.271	30.850	39.581	54.208
13	20.141	21.495	22.953	24.523	28.029	32.089	36.786	48.497	68.760
14	22.550	24.215	26.019	27.975	32.393	37.581	43.672	59.196	86.949
15	25.129	27.152	29.361	31.772	37.280	43.842	51.660	72.035	109.687
16	27.888	30.324	33.003	35.950	42.753	50.980	60.925	87.442	138.109
17	30.840	33.750	36.974	40.545	48.884	59.118	71.673	105.931	173.636
18	33.999	37.450	41.301	45.599	55.750	68.394	84.141	128.117	218.045
19	37.379	41.446	46.018	51.159	63.440	78.969	98.603	154.740	273.556
20	40.995	45.762	51.160	57.275	72.052	91.025	115.380	186.688	342.945
25	63.249	73.106	84.701	98.347	133.334	181.871	249.214	471.981	1054.791
30	94.461	113.283	136.308	164.494	241.333	356.787	530.312	1181.882	3227.174
40	199.635	259.057	337.882	442.593	761.091	1342.025	2360.757	7343.858	30088.655
50	406.529	573.770	815.084	1163.909	2400.018	4994.521	10435.649	45497.191	280255.693

Present Value of 1

$PV = 1/(1 + i)^n$

Year	4%	5%	6%	7%	8%	9%	10%	11%
1	0.9615	0.9523	0.9433	0.9345	0.9259	0.9174	0.9090	0.9009
2	0.9245	0.9070	0.8899	0.8734	0.8573	0.8416	0.8264	0.8116
3	0.8889	0.8638	0.8396	0.8163	0.7938	0.7721	0.7513	0.7311
4	0.8548	0.8227	0.7920	0.7629	0.7350	0.7084	0.6830	0.6587
5	0.8219	0.7835	0.7472	0.7130	0.6805	0.6499	0.6209	0.5934
6	0.7903	0.7462	0.7049	0.6663	0.6301	0.5962	0.5644	0.5346
7	0.7599	0.7106	0.6650	0.6227	0.5834	0.5470	0.5131	0.4817
8	0.7306	0.6768	0.6274	0.5820	0.5402	0.5018	0.4665	0.4339
9	0.7025	0.6446	0.5918	0.5439	0.5002	0.4604	0.4240	0.3909
10	0.6755	0.6139	0.5583	0.5083	0.4631	0.4224	0.3855	0.3521
11	0.6495	0.5846	0.5267	0.4751	0.4288	0.3875	0.3509	0.3172
12	0.6245	0.5568	0.4969	0.4440	0.3971	0.3555	0.3186	0.2858
13	0.6005	0.5303	0.4688	0.4150	0.3676	0.3262	0.2896	0.2575
14	0.5774	0.5050	0.4423	0.3878	0.3404	0.2992	0.2633	0.2319
15	0.5552	0.4810	0.4172	0.3624	0.3152	0.2745	0.2393	0.2090
16	0.5339	0.4581	0.3936	0.3387	0.2918	0.2518	0.2176	0.1882
17	0.5133	0.4362	0.3713	0.3166	0.2702	0.2310	0.1978	0.1696
18	0.4936	0.4155	0.3503	0.2959	0.2502	0.2119	0.1798	0.1528
19	0.4746	0.3957	0.3305	0.2765	0.2317	0.1944	0.1635	0.1376
20	0.4563	0.3768	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240
25	0.3751	0.2953	0.2329	0.1842	0.1460	0.1159	0.0922	0.0736
30	0.3083	0.2313	0.1741	0.1314	0.0993	0.0753	0.0573	0.0436
35	0.2534	0.1812	0.1301	0.0936	0.0676	0.0489	0.0355	0.0259
40	0.2082	0.1420	0.0972	0.0668	0.0460	0.0318	0.0220	0.0153

Year	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.8928	0.8849	0.8771	0.8695	0.8620	0.8547	0.8474	0.8403	0.8333
2	0.7971	0.7831	0.7694	0.7561	0.7431	0.7305	0.7181	0.7061	0.6944
3	0.7117	0.6930	0.6749	0.6575	0.6406	0.6243	0.6086	0.5934	0.5787
4	0.6355	0.6133	0.5920	0.5717	0.5522	0.5336	0.5157	0.4986	0.4822
5	0.5674	0.5427	0.5193	0.4971	0.4761	0.4561	0.4371	0.4190	0.4018
6	0.5066	0.4803	0.4555	0.4323	0.4104	0.3898	0.3704	0.3521	0.3348
7	0.4523	0.4250	0.3996	0.3759	0.3538	0.3331	0.3139	0.2959	0.2790
8	0.4038	0.3761	0.3505	0.3269	0.3050	0.2847	0.2660	0.2486	0.2325
9	0.3606	0.3328	0.3075	0.2842	0.2629	0.2434	0.2254	0.2089	0.1938
10	0.3219	0.2945	0.2697	0.2471	0.2266	0.2080	0.1910	0.1756	0.1615
11	0.2874	0.2606	0.2366	0.2149	0.1954	0.1778	0.1619	0.1475	0.1345
12	0.2566	0.2307	0.2075	0.1869	0.1684	0.1519	0.1372	0.1240	0.1121
13	0.2291	0.2042	0.1820	0.1625	0.1452	0.1298	0.1162	0.1042	0.0934
14	0.2046	0.1806	0.1597	0.1413	0.1251	0.1110	0.0985	0.0875	0.0778
15	0.1826	0.1598	0.1400	0.1228	0.1079	0.0948	0.0835	0.0735	0.0649
16	0.1631	0.1414	0.1228	0.1068	0.0930	0.0811	0.0707	0.0618	0.0540
17	0.1456	0.1252	0.1077	0.0929	0.0802	0.0693	0.0599	0.0519	0.0450
18	0.1300	0.1108	0.0946	0.0808	0.0691	0.0592	0.0508	0.0436	0.0375
19	0.1161	0.0980	0.0829	0.0702	0.0596	0.0506	0.0430	0.0366	0.0313
20	0.1036	0.0867	0.0728	0.0611	0.0513	0.0432	0.0365	0.0308	0.0260
25	0.0588	0.0471	0.0378	0.0303	0.0244	0.0197	0.0159	0.0129	0.0104
30	0.0333	0.0255	0.0196	0.0151	0.0116	0.0090	0.0069	0.0054	0.0042
35	0.0189	0.0138	0.0101	0.0075	0.0055	0.0041	0.0030	0.0022	0.0016
40	0.0107	0.0075	0.0052	0.0037	0.0026	0.0018	0.0013	0.0009	0.0006

HO 6.4

Present Value of Annuity of $1

Year	4%	5%	6%	7%	8%	9%	10%	11%
1	.9615	.9524	.9434	.9346	.9259	.9174	.9091	.9009
2	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125
3	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4868	2.4437
4	3.6299	3.5459	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024
5	4.4518	4.3295	4.2124	4.1002	3.9927	3.8896	3.7908	3.6959
6	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305
7	6.0020	5.7864	5.5824	5.3893	5.2064	5.0329	4.8684	4.7122
8	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	5.1461
9	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370
10	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892
11	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065
12	9.3851	8.8632	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924
13	9.9856	9.3936	8.8527	8.3576	7.9038	7.4869	7.1034	6.7499
14	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9819
15	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909
16	11.6523	10.8378	10.1059	9.4467	8.8514	8.3126	7.8237	7.3792
17	12.1657	11.2741	10.4773	9.7632	9.1216	8.5436	8.0216	7.5488
18	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556	8.2014	7.7016
19	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.8393
20	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5135	7.9633
25	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226	9.0770	8.4217
30	17.2920	15.3724	13.7648	12.4090	11.2578	10.2736	9.4269	8.6938
35	18.6646	16.3742	14.4982	12.9477	11.6546	10.5668	9.6442	8.8552
40	19.7928	17.1591	15.0463	13.3317	11.9246	10.7574	9.7790	8.9511

Year	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	.8929	.8850	.8772	.8696	.8621	.8547	.8475	.8403	.8333
2	1.6901	1.6681	1.6467	1.6257	1.6052	1.5852	1.5656	1.5465	1.5278
3	2.4018	2.3611	2.3216	2.2832	2.2459	2.2096	2.1743	2.1399	2.1065
4	3.0373	2.9745	2.9137	2.8549	2.7982	2.7432	2.6901	2.6386	2.5887
5	3.6048	3.5172	3.4331	3.3522	3.2743	3.1993	3.1272	3.0576	2.9906
6	4.1114	3.9975	3.8887	3.7845	3.6847	3.5892	3.4976	3.4098	3.3255
7	4.5638	4.4226	4.2883	4.1604	4.0386	3.9224	3.8115	3.7057	3.6046
8	4.9676	4.7988	4.6389	4.4873	4.3436	4.2072	4.0776	3.9544	3.8372
9	5.3282	5.1317	4.9464	4.7716	4.6065	4.4506	4.3030	4.1633	4.0310
10	5.6502	5.4262	5.2161	5.0188	4.8332	4.6586	4.4941	4.3389	4.1925
11	5.9377	5.6869	5.4527	5.2337	5.0286	4.8364	4.6560	4.4865	4.3271
12	6.1944	5.9176	5.6603	5.4206	5.1971	4.9884	4.7932	4.6105	4.4392
13	6.4235	6.1218	5.8424	5.5831	5.3423	5.1183	4.9095	4.7147	4.5327
14	6.6282	6.3025	6.0021	5.7245	5.4675	5.2293	5.0081	4.8023	4.6106
15	6.8109	6.4624	6.1422	5.8474	5.5754	5.3242	5.0916	4.8759	4.6755
16	6.9740	6.6039	6.2651	5.9542	5.6685	5.4053	5.1624	4.9377	4.7296
17	7.1196	6.7291	6.3729	6.0472	5.7487	5.4746	5.2223	4.9897	4.7746
18	7.2497	6.8399	6.5504	6.1280	5.8178	5.5339	5.2732	5.0333	4.8122
19	7.3658	6.9380	6.6231	6.1982	5.8774	5.5845	5.3162	5.0700	4.8435
20	7.4694	7.0248	6.6869	6.2593	5.9288	5.6278	5.3527	5.1009	4.8696
25	7.8431	7.3300	6.8729	6.4641	6.0971	5.7662	5.4669	5.1951	4.9476
30	8.0552	7.4956	7.0027	6.5660	6.1772	5.8294	5.5168	5.2346	4.9789
35	8.1755	7.5856	7.0700	6.6166	6.2153	5.8582	5.5386	5.2512	4.9915
40	8.2438	7.6344	7.1050	6.6418	6.2335	5.8713	5.5481	5.2581	4.9966

Annual Payment per $1 of Loan at Given Interest Rates and Maturities (Amortization Table)

YEAR	4%	5%	6%	7%	8%	9%	10%	11%
1	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100
2	.5301	.5378	.5454	.5530	.5607	.5684	.5761	.5839
3	.3603	.3672	.3741	.3810	.3880	.3950	.4021	.4092
4	.2754	.2820	.2885	.2952	.3019	.3086	.3154	.3223
5	.2246	.2309	.2373	.2438	.2504	.2570	.2637	.2705
6	.1907	.1970	.2033	.2097	.2163	.2229	.2296	.2363
7	.1666	.1728	.1791	.1855	.1920	.1986	.2054	.2122
8	.1485	.1547	.1610	.1674	.1740	.1806	.1874	.1943
9	.1344	.1406	.1470	.1534	.1600	.1667	.1736	.1806
10	.1232	.1295	.1358	.1423	.1490	.1558	.1627	.1698
11	.1141	.1203	.1267	.1333	.1400	.1469	.1539	.1611
12	.1065	.1128	.1192	.1259	.1326	.1396	.1467	.1540
13	.1001	.1064	.1129	.1196	.1265	.1335	.1407	.1481
14	.0946	.1010	.1075	.1143	.1212	.1284	.1357	.1432
15	.0899	.0963	.1029	.1097	.1168	.1240	.1314	.1390
16	.0858	.0922	.0989	.1058	.1129	.1203	.1278	.1355
17	.0821	.0886	.0954	.1024	.1096	.1170	.1246	.1324
18	.0789	.0855	.0923	.0994	.1067	.1142	.1219	.1298
19	.0761	.0827	.0896	.0967	.1041	.1117	.1195	.1275
20	.0735	.0802	.0871	.0943	.1018	.1095	.1174	.1255
25	.0640	.0709	.0782	.0858	.0936	.1018	.1101	.1187
30	.0578	.0650	.0726	.0805	.0888	.0973	.1060	.1150
35	.0535	.0610	.0689	.0772	.0858	.0946	.1036	.1129
40	.0505	.0505	.0664	.0750	.0838	.0929	.1022	.1117

YEAR	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.1200	1.1300	1.1400	1.1500	1.1600	1.1700	1.1800	1.1900	1.2000
2	.5916	.5994	.6072	.6151	.6229	.6308	.6387	.6466	.6545
3	.4163	.4235	.4307	.4379	.4452	.4525	.4599	.4673	.4747
4	.3292	.3361	.3432	.3502	.3573	.3645	.3717	.3789	.3862
5	.2774	.2843	.2912	.2983	.3054	.3125	.3197	.3270	.3343
6	.2432	.2501	.2571	.2642	.2713	.2786	.2859	.2932	.3007
7	.2191	.2261	.2331	.2403	.2476	.2549	.2623	.2698	.2774
8	.2013	.2083	.2155	.2228	.2302	.2376	.2452	.2528	.2606
9	.1876	.1948	.2021	.2095	.2170	.2246	.2323	.2401	.2480
10	.1769	.1842	.1917	.1992	.2069	.2146	.2225	.2304	.2385
11	.1684	.1758	.1833	.1910	.1988	.2067	.2147	.2228	.2311
12	.1614	.1689	.1766	.1844	.1924	.2004	.2086	.2168	.2252
13	.1556	.1633	.1711	.1791	.1871	.1953	.2036	.2121	.2206
14	.1508	.1586	.1666	.1746	.1828	.1912	.1996	.2082	.2168
15	.1468	.1547	.1628	.1710	.1793	.1878	.1964	.2050	.2138
16	.1433	.1514	.1596	.1679	.1764	.1850	.1937	.2025	.2114
17	.1404	.1486	.1569	.1653	.1739	.1826	.1914	.2004	.2094
18	.1379	.1462	.1546	.1631	.1718	.1807	.1896	.1986	.2078
19	.1357	.1441	.1526	.1613	.1701	.1790	.1881	.1972	.2064
20	.1338	.1423	.1509	.1597	.1686	.1776	.1862	.1960	.2053
25	.1275	.1364	.1454	.1546	.1640	.1734	.1829	.1924	.2021
30	.1241	.1334	.1428	.1523	.1618	.1715	.1812	.1910	.2008
35	.1223	.1318	.1414	.1511	.1608	.1707	.1805	.1904	.2003
40	.1213	.1309	.1407	.1505	.1604	.1703	.1802	.1901	.2001

TIME VALUE OF MONEY

1. If land is currently priced at $1,000 per acre, what will the value of land be in five years with an 8 percent inflation rate? Assume that no other factor is affecting the value of land (HO 6.1).

2. If you invested $100 in a savings account at 7 percent interest, how much money would you have in 40 years? (HO 6.1)

3. How many years are required for $50 to double if it is earning 4 percent interest?

4. How many years will it require for $1,000 to double if earning 16 percent interest?

PRESENT VALUE

1. A timber buyer has offered to buy the timber in your woodlot for $13,000. After checking with the farm forester, you find that the forester estimates that this stand would be worth $20,000 10 years from now. If interest is 8 percent, should you sell now or wait 10 years? (There will be practically no costs associated with waiting 10 years.) Use HO 6.3 to determine the present value of $20,000 received 10 years from now.

2. A farmer is considering the purchase of a new riding lawn mower. The price is $1,000. The dealer offers to finance it and let the farmer pay $400 per year for three years. If the farmer figues interest at 8 percent, would he better off to pay cash or to accept the dealers terms (refer to HO 6.4 with three years at 8 percent)? Show all your work.

3. A farmer is considering building a hog feeding floor for 500 head. Plans are to turn 2 1/2 groups, or 1,250 hogs, per year. Budgets indicate that about $6 per hog above variable costs (including pig, feed, labor, etc., but not including depreciation or interest) can be expected. (HO 6.4)

   What is the present value of the expected income for 12 years at 8%?

   According to the best information available, when equipped, it will cost about $50,000, and it will last about 12 years.

   Would this be a profitable investment?

AMORTIZATION

1. A farmer has the opportunity to purchase 80 acres at $1,000 per acre. Assume the farmer has a $40,000 down payment and the seller will finance the balance for 10 years at 8 percent. The amount borrowed is $40,000 ($80,000 - $40,000 = $40,000). What would be the annual payment?

2. Assume that a young farmer wants to buy 100 acres. The land is currently worth $800 an acre. The farmer will pay 30% down and finance the rest for 30 years at 10% interest. If this were an amortized loan, what would the farmer's annual payment be?

PROFITABILITY

1. An investor has the opportunity to purchase 80 acres at $1,000 per acre for a total of $80,000. Assume the investor will keep the land for 10 years. If land prices are expected to inflate at 6% per year, what will that land be worth in 10 years? (Use HO 6.1)

2. What is the present value of that amount if the opportunity interest rate is 8%?

3. The investor will earn $6,000 a year for 10 years from renting the land. What is the present value of this stream of income? (use HO 6.3) The interest rate is 8%.

4. Calculate the profitability index for this investment.

AGRICULTURAL MANAGEMENT AND ECONOMICS

UNIT II - BUSINESS MANAGEMENT

GETTING READY FOR THIS UNIT

This unit on business management is designed for the individual managing an agribusiness or a farm. It is important to cover all lessons with students even though some of the lessons apply more to the agribusiness manager than the farm manager.

Examples have been included throughout this unit; however, the instructor is encouraged to provide local examples. Answers have been provided for many of the assignment sheets. The instructor should provide local conditions (i.e. current prices) where applicable.

CONTENTS

Lesson 1–Ways of Organizing a Business II-1
  AS 1.1: Business Organizational Structures
Lesson 2–Steps in Buying Land II-13
  HO 2.1: Example Appraisal Summary
  TM 2.1: Land Survey and Description
  TM 2.2: Legal Description Exercise Problem
  AS 2.1: Legal Description Exercise Problem
Lesson 3–Starting an Agricultural Business II-31
Lesson 4–Using Contracts in Agriculture II-39
  HO 4.1: Crop Share Lease
  HO 4.2: Pasture Lease
  HO 4.3: Cooperative Education Program Student Agreement
Lesson 5–Business Procedures II-59
Lesson 6–Agribusiness Records II-67
Lesson 7–Managing Inventory and Determining Selling Price II-75
Lesson 8–Agricultural Business Customer Transactions II-83
  HO 8.1: Sample City Sales Tax Table
  HO 8.2: Exempt Sales
  HO 8.3: Taxable Sales
  AS 8.1: Problems in Figuring Sales Tax
Lesson 9–Preparation and Importance of Sales Tickets II-99
  HO 9.1: Steps in Filling Out a Sales Ticket
  HO 9.2: Sample Sales Ticket
  HO 9.3: Sales Ticket Product Check List
  TM 9.1: Incorrect Sales Ticket
  TM 9.2: Completed Sales Ticket
  AS 9.1: Problems in Figuring Sales Tickets
Lesson 10–Customer Credit II-121
  HO 10.1: A Credit Application for a Charge Account
  AS 10.1: Credit Statement
  AS 10.2: Rate Yourself as a Credit Risk
Lesson 11–Loans for Agricultural Businesses II-135
Lesson 12–Conducting a Financial Analysis II-143
  AS 12.1: The Agricultural Business Corporation

Lesson 13–Effects of Income Tax on the Agricultural Business II-153
  TM 13.1: Taxes
  TM 13.2: Methods to Delay Income
  TM 13.3: Methods to Increase Income
Lesson 14–Calculating Depreciation for Tax Purposes II-167
  HO 14.1: Recovery Periods for Selected Assets under ACRS, Regular MACRS, and Alternative MACRS
  AS 14.1: Basis and Expensing
  AS 14.2: MACRS Conventions
  AS 14.3: Regular MACRS Methods and Property Classification
  AS 14.4: Calculating Depreciation
Lesson 15–Managing Risk in the Agricultural Business II-191
  TM 15.1: Methods of Reducing Risk
Lesson 16–Insurance Needs in the Agricultural Business II-201
Lesson 17–Cooperating Agencies in Agriculture II-209

OBJECTIVES

1. The student will be able to compare the different business structures for agricultural businesses.

2. The student will be able to trace the steps involved in selecting, appraising, and completing the purchase of land.

3. The student will be able to explain the factors involved in starting an agricultural business.

4. The student will be able to identify and describe key components of contracts.

5. The student will be able to explain the importance of business procedures.

6. The student will be able to explain the importance of agribusiness records.

7. The student will be able to describe how to manage inventory and how to determine the selling price of merchandise.

8. The student will be able to explain how to handle customer transactions.

9. The student will be able to prepare a sales ticket.

10. The student will able to explain customer credit in an agricultural business.

11. The student will be able to explain factors that should be considered before securing a loan.

12. The student will be able to complete a financial analysis of an agricultural business.

13. The student will be able to explain business practices to maximize after-tax income.

14. The student will be able to calculate the depreciation of an agricultural business investment.

15. The student will be able to identify ways of managing risk in business.

16. The student will be able to explain the insurance needs of an agricultural business.

17. The student will be able to identify several cooperating agencies and services available.

NOTE: Percent of accuracy should be set by instructors to reflect passing grades within their school systems.

COMPETENCIES

1. Compare the different business structures for agricultural businesses.
2. Identify the steps in buying land.
3. Explain the factors involved in starting an agricultural business.
4. Identify and describe key components of contracts.
5. Explain the importance of business procedures.
6. Explain the importance of agribusiness records.
7. Describe how to manage inventory and determine selling price.
8. Explain how to handle customer transactions.
9. Prepare a sales ticket.
10. Describe the proper procedures for handling customer credit in a business.
11. Explain factors that should be considered before securing a loan.
12. Complete a financial analysis of a business.
13. Explain business practices that will maximize after-tax income.
14. Calculate the depreciation of an investment.
15. Identify methods of reducing risk in a business.
16. Explain the types of insurance needs of an agricultural business.
17. Identify several cooperating agencies and services available.

MOTIVATIONAL TECHNIQUE OR INTEREST APPROACH

1. Give the students a sheet of paper with the name of a local agribusiness at the top. Tell them that they have just been selected as the manager of the business. Ask them to make a list of things they will need to know in order to maintain the day to day operation of the business. Also ask them to make a list of people (agencies) they will need to be able to deal with as manager of the business.

2. Write a check to one or more students that contains a mistake(s) (no signature, no date, incompatible amounts, etc.). Ask students to describe how the mistake influences their

ability to cash the check. Can the check be altered in some way? How should a check be written to avoid such problems?

3. Take candy corn into the classroom to sell to students. Explain that you will charge one cent per candy corn for students. While making the sale to each student, overcharge some, undercharge others, and miscount how many are given to other students. Ask students to discuss how these actions made them feel about you as a business person and how profitability would be affected.

EVALUATION

1. Give short, objective tests following each lesson and a more in-depth objective test at the conclusion of the unit.

2. Observe the changes in behavior as evidence of an improved ability of students to deal with problems in this unit using background acquired from earlier units.

3. Observe students' attempts to solve similar problems in their supervised occupational experience programs.

REFERENCES AND MATERIALS

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2. Teacher References

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t. Steward, Jim; Raleigh Jobes. Farm and Ranch Business Management. Moline, IL: Deere and Company, 1985.

u. University of Missouri-Columbia Extension Division agricultural publications

1) G00406: Estimating Past Farm Real Estate Values with Limited Information
2) G00520: Verbal Farm Rental Agreements Under Missouri Law
3) G00426: Farm Lease Agreement
4) G00540: Leasing vs. Buying Equipment
5) G00405: Farm Real Estate Appraising
6) G00428: Customary Farm Rental Agreements

AGRICULTURAL MANAGEMENT AND ECONOMICS

UNIT II - BUSINESS MANAGEMENT

MAJOR COMPETENCY PROFILE

Directions: Evaluate the student by checking the appropriate number or letter to indicate the degree of competency. The rating for each task should reflect **employability readiness** rather than the grades given in class.

Rating Scale:
3 **Mastered** - can work independently with no supervision
2 **Requires Supervision** - can perform job completely with limited supervision
1 **Not Mastered** - requires instruction and close supervision
N **No Exposure** - no experience or knowledge in this area

3	2	1	N	
				Business Management
				1. Compare the different business structures for agricultural businesses.
				2. Identify the steps in buying land.
				3. Explain the factors involved in starting an agricultural business.
				4. Identify and describe key components of contracts.
				5. Explain the importance of business procedures.
				6. Explain the importance of agribusiness records.
				7. Describe how to manage inventory and determine selling price.
				8. Explain how to handle customer transactions.
				9. Prepare a sales ticket.
				10. Describe the proper procedures for handling customer credit in a business.

AGRICULTURAL MANAGEMENT AND ECONOMICS

UNIT II - BUSINESS MANAGEMENT Cont.

MAJOR COMPETENCY PROFILE

Directions: Evaluate the student by checking the appropriate number or letter to indicate the degree of competency. The rating for each task should reflect **employability readiness** rather than the grades given in class.

Rating Scale:
3 **Mastered** - can work independently with no supervision
2 **Requires Supervision** - can perform job completely with limited supervision
1 **Not Mastered** - requires instruction and close supervision
N **No Exposure** - no experience or knowledge in this area

3	2	1	N	
				Business Management
				11. Explain factors that should be considered before securing a loan.
				12. Complete a financial analysis of a business.
				13. Explain business practices that will maximize after-tax income.
				14. Calculate the depreciation of an investment.
				15. Identify methods of reducing risk in a business.
				16. Explain the types of insurance needs of an agricultural business.
				17. Identify several cooperating agencies and services available.

Agricultural Management and Economics Unit II - Business Management

CLASS/SECTION ________________

STUDENTS:	Compare the different business structures for agricultural businesses.	Identify the steps in buying land.	Explain the factors involved in starting an agricultural business.	Identify and describe key components of contracts.	Explain the importance of business procedures.	Explain the importance of agribusiness records.	Describe how to manage inventory and determine selling price.	Explain how to handle customer transactions.	Prepare a sales ticket.	Describe the proper procedures for handling customer credit in a business.

CLASS/SECTION ______________

STUDENTS:	Explain factors that should be considered before securing a loan.	Complete a financial analysis of a business.	Explain business practices that will maximize after-tax income.	Calculate the depreciation of an investment.	Identify methods of reducing risk in a business.	Explain the types of insurance needs of an agricultural business.	Identify several cooperating agencies and services available.			

UNIT II - BUSINESS MANAGEMENT

Lesson I: Ways of Organizing a Business

Objective: The student will be able to compare the different business structures for agricultural businesses.

Study Questions

1. **What is the role of agricultural businesses in the community?**
2. **What are the different organizational structures of agricultural businesses?**
3. **What are the characteristics of each type of organizational structure?**
4. **What are the advantages and disadvantages of the sole proprietorship?**
5. **What is a general partnership, and what are its advantages and disadvantages?**
6. **What is a limited partnership, and what are its advantages and disadvantages?**
7. **What are the advantages and disadvantages of a corporation?**
8. **What are the advantages and disadvantages of a cooperative?**
9. **Which is the best structure for an agricultural business?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.
2. Assignment Sheet
    a) AS 1.1: Business Organizational Structures

Teacher References

1. Lee, Delene W.; Jasper S. Lee. Agribusiness Procedures and Records. New York: McGraw-Hill Book Company, 1980.
2. Long, D. L.; J. D. Oliver; C. W. Coale. Introduction to Agribusiness Management. New York: McGraw-Hill Book Company, 1979.
3. Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.

UNIT II - BUSINESS MANAGEMENT

Lesson I: Ways of Organizing a Business

TEACHING PROCEDURES

A. Review

Unit I emphasized economic principles. This unit is designed to show the importance of those principles in establishing and managing an agricultural business.

B. Motivation

Ask students to list several agricultural businesses that conduct business within the community. Ask them if their parents are members of a cooperative. If so, have they received a patronage dividend check at the end of the year? Why did they receive it? Why don't all businesses give patronage dividends?

NOTE: Check out local examples of cooperatives that might be used as class examples.

C. Assignment

D. Supervised study

E. Discussion

Q1. What is the role of agricultural businesses in the community?

A1. 1) To provide useful products to the community through sales
2) To provide needed services to the community

Ask students what kind of services local agricultural businesses provide for their community and what other benefits besides services are received from local agricultural businesses.

Q2. What are the different organizational structures of agricultural businesses?

A2.
1) **Sole or individual proprietorship**
2) **Partnership**
   a) **General**
   b) **Limited**
3) **Corporation, investor-owned**
   a) **Subchapter C or regular**
   b) **Subchapter S**
   c) **Subchapter T - Cooperative**

Ask students to list the types of business structure. Write these on the chalkboard in chart form. Pass out AS 1.1 for students to use.

Q3. What are the characteristics of each type of organizational structure?

A3.

Business Organizational Structures

Features Compared	Individual	Partnership		Corporation		
		General	Limited	Regular	Subchapter S	Cooperative
1. Who owns the business?	Individual	Partners	Partners	Stockholders	Stockholders	Member-patrons
2. Who votes and how is voting done?	None necessary	Partners	General partners only	Common stockholders by shares of common stock	Stockholders	One member, one vote or proportional to patronage
3. Who makes the policy decisions?	Individual	Partners	Not involved in policy decisions	Common stockholders and directors	Stockholders	Member-patrons and directors
4. Who is financially liable?	Individual	Partners	Limited partners for amount invested	Corporation is liable	Corporation is liable	Cooperative is liable
5. Who receives the profit?	Individual	Partners in proportion to interest in business	Partners in proportion to interest in business	Stockholders in proportion to stock held	Stockholders	Patrons on a patronage basis
6. How are they taxed?	Individual files and pays	Partnership files but individual pays	Partnership files but individual pays	Corporation pays tax on profit; stockholders taxed on dividends	Corporation files, stockholders pay	Cooperative files but members pay based on patronage refund

Have the students fill out AS 1.1 to answer this question. Refer to AS 1.1 as needed.

Q4. What are the advantages and disadvantages of the sole proprietorship?

A4. 1) Advantages
- **a) Simple**
- **b) No vote needed**
- **c) Individual management and control**
- **d) Receives all profits**

2) Disadvantages
- **a) All assets liable**
- **b) Limited to capital owner has or can borrow**
- **c) Less tax planning available**
- **d) More difficult to plan estate**

List these on the board and discuss as to practical application. (AS 1.1)

Q5. What is a general partnership, and what are its advantages and disadvantages?

A5. 1) General partnership - association of two or more persons who, as co-owners, manage a business together
    - a) There is an agreement specifying terms. The partnership is dissolved by death, agreement, or bankruptcy.
    - b) The partnership must file tax forms, but taxes are paid by the individual, not the partnership.

2) Advantages
    - a) Equitable voice of partners is based on their contributions to the partnership
    - b) Easy to establish
    - c) Few regulations or restrictions

3) Disadvantages
    - a) Each partner is fully liable for partnership activities.
    - b) Problems may stem from partners with conflicting goals.

Discuss general partnerships and their characteristics.

Q6. What is a limited partnership, and what are its advantages and disadvantages?

A6. 1) Limited partnership - association between the main owner of the business and investors outside the business who are called limited partners
    - a) There is an agreement specifying terms. The partnership is dissolved by death, agreement, or bankruptcy.
    - b) The partnership must file tax forms, but taxes are paid by the individual, not the partnership.

2) Advantages
    - a) Limited partners are only liable for the amount they have invested.
    - b) Limited partners pay no social security tax on partnership earnings.

3) Disadvantages
    - a) All management responsibility falls on non-limited partner.
    - b) Limited partners have no voice in management decisions.

Discuss how a limited partnership is different from a general partnership.

NOTE: The Tax Reform Act of 1986 prohibits passive partners from deducting losses from partnership activities from their personal income. Passive partners include all limited partners and the general partners who do not take an active role in management. When in doubt, one should seek advise from a tax consultant.

Q7. What are the advantages and disadvantages of a corporation?

A7. 1) Advantages
    - a) Continuity of management
    - b) Limited personal liability

        - c) Access to more capital
        - d) Ease of estate planning
    - 2) Disadvantages
        - a) More record keeping and red tape
        - b) Possibility of "double" taxation of profits
        - c) Cost involved in setting up
        - d) Ending the corporation

Ask students to discuss the advantages and disadvantages of a corporation.

Q8. **What are the advantages and disadvantages of a cooperative?**

A8.
- 1) Advantages
    - a) Limited personal liability
    - b) Customer control
    - c) Cooperative responsible to customers
    - d) Profits for customers
    - e) Income tax minimization for the cooperative
    - f) Providing needed products or services
- 2) Disadvantages
    - a) Customer never receives full amount of profit.
    - b) Customer pays tax on full amount of profit.
    - c) Current patrons suffer from past business losses.

Discuss the advantages and disadvantages of a cooperative.

Q9. **Which is the best structure for an agricultural business?**

A9. **There is no best structure for an agricultural business. Each has certain unique advantages and disadvantages over the others. It will depend on individual situations and preferences. However, the sole proprietorship is the most common structure of a farm business.**

Discuss why there is no best structure for an agricultural business.

F. Other activities

1. Invite representatives from each type of business in your local community to discuss the function of their business with the class.
2. Take a field trip through a local agricultural business pointing out the various activities and procedures.

G. Conclusion

Agricultural businesses provide useful products and services to the community. These businesses can be structured as an individual proprietorship, a partnership or a corporation. The type of structure will depend on individual situations and preferences. The sole proprietorship is the most common structure of a farm business.

H. Competency

Compare the different business structures for agricultural businesses.

I. Answers to Evaluation

1. b
2. d
3. b
4. a
5. c
6. a
7. b
8. e
9. d
10. a. Provide needed services to community
    b. Provide needed products to community

J. Answers to Assignment Sheet

AS 1.1: See answer to Study Question 3.

UNIT II - BUSINESS MANAGEMENT

Lesson I: Ways of Organizing a Business

Name ____________________

Date ____________________

EVALUATION

Circle the letter that corresponds to the best answer.

1. The most common structure of a farm business is the __________.

   a. Corporation
   b. Sole proprietorship
   c. Partnership
   d. Joint venture

2. Which is the best organizational structure for an agricultural business?

   a. Corporation
   b. Sole proprietorship
   c. Partnership
   d. None of the above

3. A partnership __________.

   a. Reports and pays income tax
   b. Reports but does not pay income tax
   c. May result in double taxation
   d. None of the above

4. A regular corporation __________.

   a. Reports and pays income taxes
   b. Reports but does not pay income tax
   c. Has a patronage fund to protect against unexpected expenses
   d. Primarily serves its members

Match the following business structures with the correct description.

5. ______ Individual proprietorship
6. ______ Partnership
7. ______ Regular corporation
8. ______ Subchapter S
9. ______ Cooperative

a. Co-ownership is another name.
b. Corporation files and pays tax.
c. Financial liability of individual is unlimited in both business and personal.
d. Customers share in profits.
e. Corporation files taxes but stockholders pay.

Complete the following short answer question.

10. List two roles of agricultural businesses.

    a.

    b.

Business Organizational Structures

Features Compared	Individual	Partnership		Corporation		
		General	Limited	Regular	Subchapter S	Cooperative
1. Who owns the business?						
2. Who votes and how is voting done?						
3. Who makes the policy decisions?						
4. Who is financially liable?						
5. Who receives the profit?						
6. How are they taxed?						

II-II

AS 1.1

UNIT II - BUSINESS MANAGEMENT

Lesson 2: Steps in Buying Land

Objective: The student will be able to trace the steps involved in selecting, appraising, and completing the purchase of land.

Study Questions

1. **What factors should be considered when selecting land?**
2. **How is an appropriate dollar value to pay for property determined?**
3. **How is land legally described?**
4. **How can finances to purchase land be secured?**
5. **What are the four steps in purchasing land?**
6. **What points should be in a contract?**
7. **What is the difference between a general warranty deed, quit-claim deed, a deed of trust, and an abstract?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.
2. Handout
   - a) HO 2.1: Example Appraisal Summary
3. Assignment Sheet
   - a) AS 2.1: Legal Description Exercise Problem

Teacher References

1. Osborn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.
2. University of Missouri-Columbia Extension Division agricultural publications
   - a) G00406: Estimating Past Farm Real Estate Values with Limited Information
   - b) G00405: Farm Real Estate Appraising

3. Transparency Masters

a) TM 2.1: Land Survey and Description
b) TM 2.2: Legal Description Exercise Problem

UNIT II - BUSINESS MANAGEMENT

Lesson 2: Steps in Buying Land

TEACHING PROCEDURES

A. Review

B. Motivation

The purchase of land may be a major purchase during a lifetime for most individuals. It is essential to know how to determine what to pay for land and how to go through the mechanics of making the purchase.

C. Assignment

D. Supervised study

E. Discussion

Q1. What factors should be considered when selecting land?

A1.
1) **Size of business or farm**
2) **Soil conditions**
3) **Improvements**
4) **Possible hazards**
5) **Neighbors, schools, churches, community**
6) **Location**
   - a) **Ease of access**
   - b) **Ease of traffic movement**
   - c) **Distances from**
     - (1) **Schools**
     - (2) **Town or city**
     - (3) **Customers**

Ask students to discuss the factors they will need to consider when selecting land.

Q2. How is an appropriate dollar value to pay for property determined?

A2.
1) **Capitalization approach**

$$\frac{\text{Annual Profit of Landlord}}{\text{Rate of Interest Desired}} = \text{Value of Property}$$

Add or subtract values for factors that may influence the property value. Add value of property and factors to get total value of property.

2) **Comparative advantage approach**
   - a) **Find a fair selling price of comparable land in area.**
   - b) **Add or subtract values for factors that may influence the property value.**

The capitalization approach and the comparative advantage approach can be used together. One can determine what the land in question is worth and compare that with other purchasing opportunities in the area. Discuss this relationship with students and then discuss HO 2.1.

Q3. How is land legally described?

A3.
1) **Metes and bounds**
2) **Rectangular survey**

Discuss Study Question 3, using the reference for the basis of the discussion and the handouts for working through some problems. Most counties have a plat book, which will help on this. (TM 2.1 and 2.2, and AS 2.1)

Q4. How can finances to purchase land be secured?

A4.
1) **Sources of finances**
    a) **Investments**
    b) **Gifts or loans from friends and family**
    c) **Lending institutions**
    d) **Person selling the land**
2) **Information needed to receive a loan**
    a) **Personal information**
    b) **Business description**
    c) **Financial information about the business**

Ask students where they might obtain the finances to buy land.

Q5. What are the four steps in purchasing land?

A5.
1) **Negotiation**
2) **Contract**
3) **Conveyance**
4) **Recording**

Ask students to discuss the steps in purchasing land.

Q6. What points should be in a contract?

A6.
1) **Legal description of the land**
2) **Price to be paid**
3) **Time and place of payment**
4) **Collateral**
5) **Transfer of possession**
6) **Taxes**
7) **Assignment**
8) **Abstract of title or title insurance**
9) **Deed - proof of ownership**
    a) **Quit-claim**
    b) **Warranty**
    c) **Deed of trust**
10) **Names of all parties involved**

11) **Offer and acceptance**
12) **Sufficient payment**

Ask students to discuss information needed in a contract.

Q7. **What is the difference between a general warranty deed, quit-claim deed, deed of trust, and an abstract?**

A7.
1) **General warranty deed - Seller legally promises that he or she had a good and clear title to the land.**
2) **Quit-claim deed - Seller has legally made no promise of having a good, clear title to the land.**
3) **Deed of trust - This deed is used for mortgaged property and names a trustee who, in case of default on the payment of the debt, is given a power of sale.**
4) **Abstract - An abstract is a chronological account of the state of the title to a piece of land. It should contain a full summary of all grants, transfers of ownership, and all records of judicial proceedings that affect the title. An abstract should also contain records of any overdue taxes or any other financial claims.**

Ask students which type of deed they would want when purchasing land.

F. Other activities

If time is available, invite a local real estate agent to class. The agent could discuss topics such as how to determine the value of land, and how young people should go about buying land. Students need to refer to Unit I, Lesson 6.

G. Conclusion

The selection process and legal aspects are very important in buying land as well as in the type of deed obtained. Each of these factors should be considered before purchasing land. The value of the land and the source of finances should also be considered very carefully.

H. Competency

Identify the steps in buying land.

I. Answers to Evaluation

1. Rectangular survey

2.

INCOME

Source	Acres	Yield/Acre	Landlord's Share	Value/ Unit	Total Income
Corn	70	70 bu.	2450 bu.	$ 2.25	$ 5,513.
Wheat	30	40 bu.	600 bu.	3.50	2,100.
Hay	22	2 ton	22 ton	30.00	660.
Pasture	30	Cash Rent	–	25.00	750.
Buildings		Cash Rent	–	800.00	800.
				Gross Income	$ 9,823

EXPENSES: (Landlord's)

Taxes	$ 600
Insurance	200
Maintenance	1000
Fertilizer and Seed	1500
Harvesting and Delivery	1000
Ordinary Management	900
Total Expense	$ 5,200

NET EARNINGS: $ 4,623

EARNINGS VALUE AT 8% (Net earnings/.08): $ 57,788

ADJUSTMENTS:	Plus	Minus	
Location		$4,500	
Community	–0–	–0–	
Hazards		$4,000	
Improvements	$3,000		
House and Yard	$7,000		
Churches and School	$ 500		
TOTAL	$ 10,500	$ 8,500	Adjustment $ 2,000

TOTAL BASIC VALUE: $ 59,788

Appraised Value Per Acre $ 59.788/160 = $ 374.00

3. Answers should include four of the following:
   Legal description of the land
   Price to be paid
   Time and place of payment
   Collateral
   Transfer of possession
   Taxes
   Assignment
   Abstract of title or title insurance
   Deed
   Names of all parties involved
   Offer and acceptance
   Sufficient payment
4. 40 acres
5. d
6. b
7. d

134

I. Answers to AS 2.1

	Size	Description
1.	160 acres	NW 1/4 of S10, T4N, R3W of the 5th P.M.
2.	40 acres	SW 1/4, SE 1/4 of S10, T4N, R3W of the 5th P.M.
3.	20 acres	W 1/2, SE 1/4, SE 1/4 of S10, T4N, R3W of the 5th P.M.
4.	10 acres	SE 1/4, SE 1/4, SE 1/4 of S10, T4N, R3W of the 5th P.M.
5.	20 acres	S 1/2, NW 1/4, SE 1/4 of S10, T4N, R3W of the 5th P.M.
6.	10 acres	NW 1/4, NW 1/4, SE 1/4 of S10, T4N, R3W of the 5th P.M.
7.	5 acres	N 1/2, SE 1/4, SW 1/4, NE 1/4 of S10, T4N, R3W of the 5th P.M.
8.	10 acres	NW 1/4, SW 1/4, NE 1/4 of S10, T4N, R3W of the 5th P.M.
9.	40 acres	S 1/2, N 1/2, NE 1/4 of S10, T4N, R3W of the 5th P.M.
10.	20 acres	N 1/2, NW 1/4, NE 1/4 of S10, T4N, R3W of the 5th P.M.

UNIT II - BUSINESS MANAGEMENT Name ______________

Lesson 2: Steps in Buying Land Date ______________

EVALUATION

Complete the following short answer questions.

1. Which type of land description is used in Missouri?

2. Determine the value of a 160-acre farm using the following information:

INCOME

Source	Acres	Yield/Acre	Landlord's Share	Value/ Unit	Total Income
Corn	70	70 bu.	2450 bu.	$ 2.25	$ ________
Wheat	30	40 bu.	600 bu.	3.50	________
Hay	22	2 ton	22 ton	30.00	________
Pasture	30	Cash Rent	–	25.00	________
Buildings		Cash Rent	–	800.00	________
				Gross Income	$ ________

EXPENSES: (Landlord's)

Taxes	$ 600
Insurance	200
Maintenance	1000
Fertilizer and Seed	1500
Harvesting and Delivery	1000
Ordinary Management	900
Total Expense	$ ________

NET EARNINGS: $ ________

EARNINGS VALUE AT 8% (Net earnings/.08): $ ________

ADJUSTMENTS:

	Plus	Minus	
Location		$4,500	
Community	– 0 –	– 0 –	
Hazards		$4,000	
Improvements	$3,000		
House and Yard	$7,000		
Churches and School	$ 500		
TOTAL	$ ________	$ ________	Adjustment $ ________

TOTAL BASIC VALUE: $ ________

Appraised Value Per Acre $ ________

3. List four points that should be in a contract.

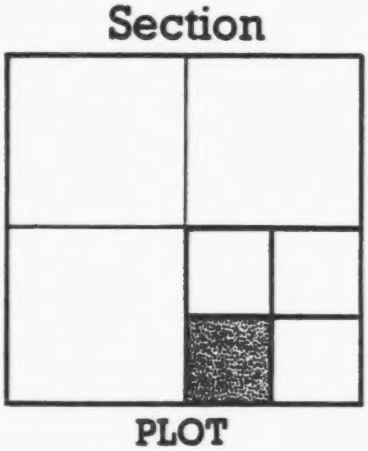
   a.

   b.

   c.

   d.

4. How many acres are in the shaded area of land of Section 3, Township 4N, Range 3W, of the 5th (P.M.)?



Circle the letter that corresponds to the best answer.

5. What is the legal description of the shaded area in question 4?

   a. NE 1/8, SW 1/4, of S5, T3N, R3W, of the 5th P.M.

   b. SE 1/4, SE 1/4 of S3, T5N, R4W of the 5th P.M.

   c. SE 1/4, SW 1/4 of S3, T4N; R3W, of the 5th P.M.

   d. SW 1/4, SE 1/4 of S3, T4N, R3W, of the 5th P.M.

6. Which of the following types of deeds would name a trustee to sell the land if debt is not paid?

   a. Quit-claim deed
   b. Deed of trust
   c. General warranty deed
   d. None of the above

7. Finances can be secured from which of the following?

   a. Willing seller
   b. Banks
   c. Family members
   d. All of the above

HO 2.1

Example Appraisal Summary

Income Capitalization Approach
On 160 Acre Missouri Farm

INCOME

SOURCE	ACRES	YIELD	LANDLORD'S SHARE	VALUE/ UNIT	TOTAL INCOME
Corn	70	70 bu.	2450 bu.	$ 2.50	$ 6,125
Wheat	30	40 bu.	600 bu.	4.00	2,400
Hay	22	2 ton	22 ton	30.00	660
Pasture	30	Cash Rent	-------	25.00	750
Buildings	8	Cash Rent	-------		1,200
			Gross Income		$11,135

EXPENSES: (Landlord's)

Taxes	$ 500		
Insurance	150		
Maintenance	900		
Fertilizer and Seed	2000		
Harvesting and Delivery	1600		
Ordinary Management	500		
		Total Expense	$ 5,650

NET EARNINGS: $ 5,485

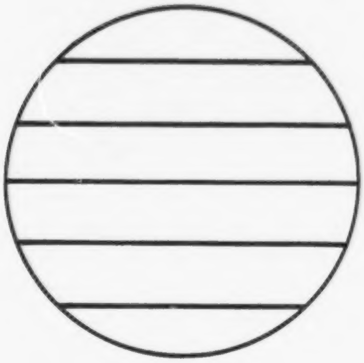
EARNINGS VALUE AT 8%: ($5,484 ÷ .08) $68,562

ADJUSTMENTS:	Plus	Minus	
Location		$ 4,000	
Community	-0-	-0-	
Hazards		$ 3,000	
Improvements	$ 3,200		
House and Yard	$ 8,000		
Churches and School	500		
TOTAL	$11,700	$7,000 Adjustment	$ 4,700

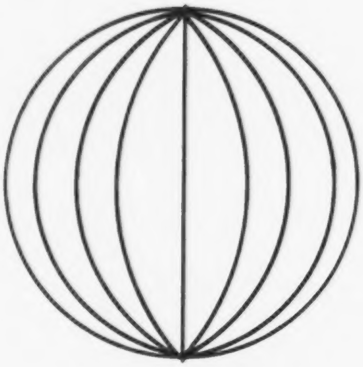
TOTAL BASIC VALUE: $73,262

Appraised Value Per Acre $458

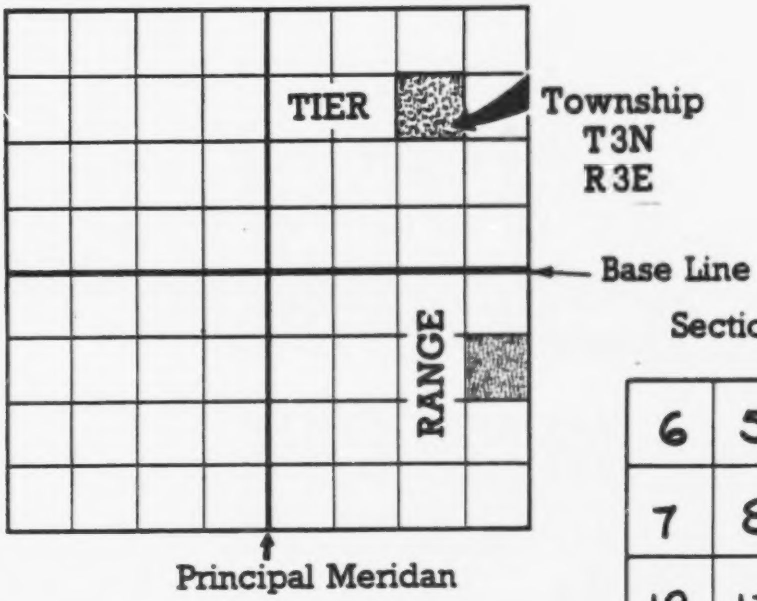
Land Survey and Description



Latitude



Longitude

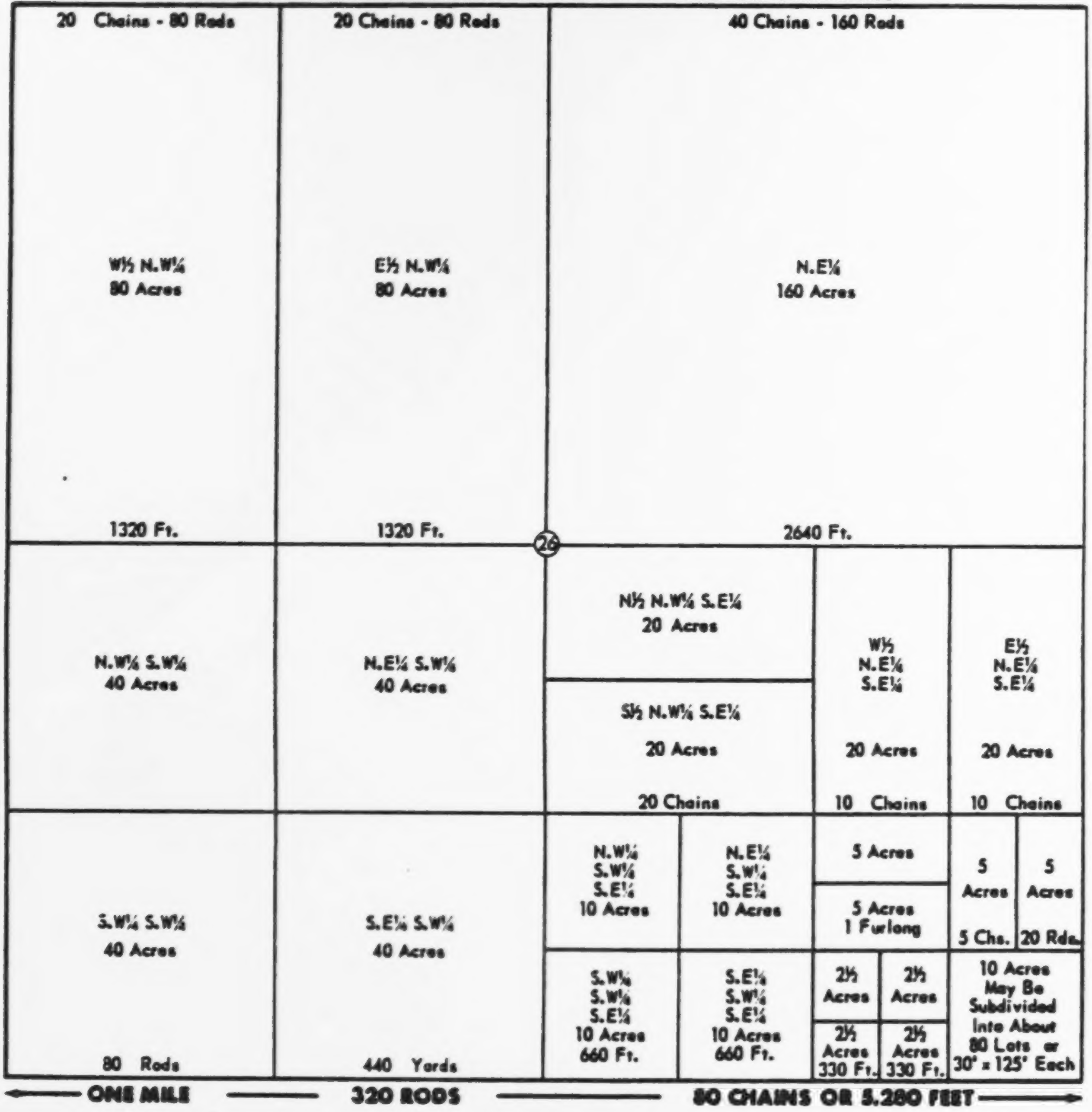

TIER
Township
T3N
R3E
Base Line
RANGE
Principal Meridan

Sections within a Township

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Divisions of a Section

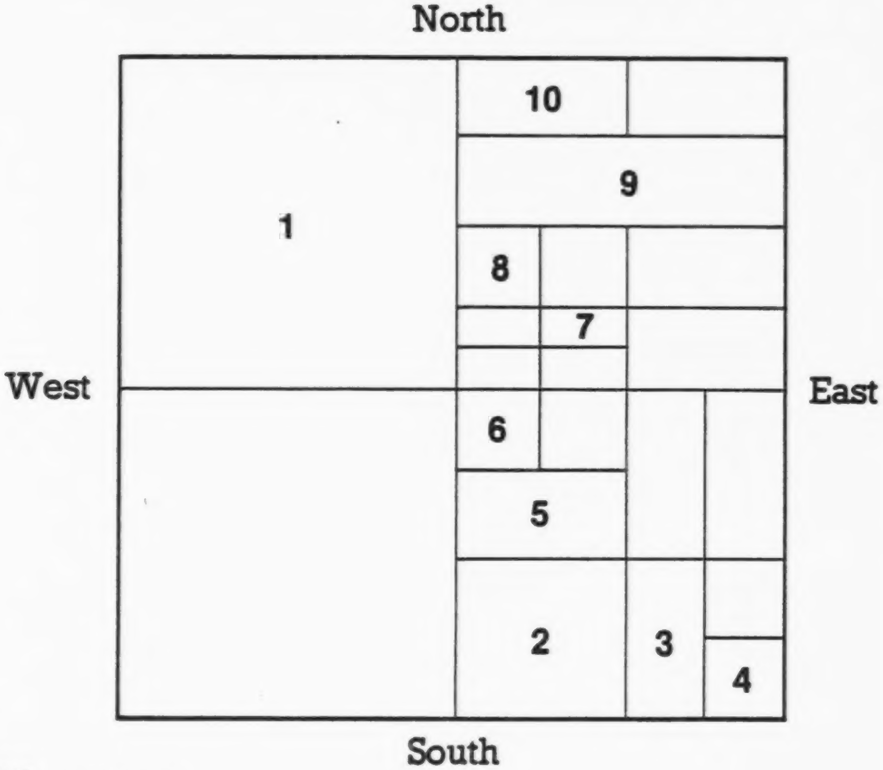
MAP OF A SECTION OF LAND SHOWING AREA AND DISTANCES.
A SECTION OF LAND CONTAINS 1 SQUARE MILE OR 640 ACRES.


20 Chains - 80 Rods
20 Chains - 80 Rods
40 Chains - 160 Rods
W½ N.W¼
80 Acres
E½ N.W¼
80 Acres
N.E¼
160 Acres
1320 Ft.
1320 Ft.
26
2640 Ft.
N.W¼ S.W¼
40 Acres
N.E¼ S.W¼
40 Acres
N½ N.W¼ S.E¼
20 Acres
S½ N.W¼ S.E¼
20 Acres
20 Chains
W½
N.E¼
S.E¼
20 Acres
10 Chains
E½
N.E¼
S.E¼
20 Acres
10 Chains
S.W¼ S.W¼
40 Acres
80 Rods
S.E¼ S.W¼
40 Acres
440 Yards
N.W¼
S.W¼
S.E¼
10 Acres
N.E¼
S.W¼
S.E¼
10 Acres
S.W¼
S.W¼
S.E¼
10 Acres
660 Ft.
S.E¼
S.W¼
S.E¼
10 Acres
660 Ft.
5 Acres
5 Acres
1 Furlong
5
Acres
5 Chs.
5
Acres
20 Rds.
2½
Acres
2½
Acres
2½
Acres
330 Ft.
2½
Acres
330 Ft.
10 Acres
May Be
Subdivided
Into About
80 Lots or
30' x 125' Each
ONE MILE
320 RODS
80 CHAINS OR 5,280 FEET

140

TM 2.2
AS 2.1

Legal Description Exercise Problem


North
10
9
1
8
7
West
East
6
5
2
3
4
South

Given:
S 10
T 4N
R 3W
5th P. M.
1 section equals 640 acres

After the number below, write the size and legal description of the corresponding area above.

No.	Size	Description
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

UNIT II - BUSINESS MANAGEMENT

Lesson 3: Starting an Agricultural Business

Objective: The student will be able to explain the factors involved in starting an agricultural business.

Study Questions

1. **What factors should be considered in starting an agricultural business?**
2. **What personal qualities are desirable in starting an agricultural business?**
3. **What is market potential, and how can it be determined?**
4. **What factors should be considered when selecting an organizational structure for the agricultural business?**
5. **What legal requirements should the potential buyer be aware of?**
6. **What financial resources can be secured for starting an agricultural business?**
7. **What groups are dealt with in agricultural business, and why are they important?**
8. **What kind of financial records should be kept?**
9. **What is involved in promoting products and services?**

Student Reference

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.

Teacher References

1. Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.
2. Starting and Managing Your Own Business in the 80's. Slide program. Smith/Mihalevich, State Fair Community College, 1983. (Available from the Instructional Materials Laboratory, University of Missouri-Columbia.)

UNIT II - BUSINESS MANAGEMENT

Lesson 3: Starting an Agricultural Business

TEACHING PROCEDURES

A. Review

B. Motivation

Ask students if they would like to be their own bosses and be employed at something they have an interest in and the skills to handle.

C. Assignment

D. Supervised study

E. Discussion

Q1. What factors should be considered in starting an agricultural business?

A1.
1) **Personal qualities**
2) **Market potential**
3) **Organizational structure**
4) **Legal requirements**
5) **Financing**
6) **Management**
7) **Financial records needed**
8) **Promotion/advertising**

Ask students to discuss this list. The class may wish to add factors. Each factor on the list is discussed in more detail through the rest of the lesson.

Q2. What personal qualities are desirable in starting an agricultural business?

A2.
1) **Self-motivation**
2) **Clear thinking and a good imagination**
3) **Leadership skills**

Ask students to discuss these qualities and why they are important.

Q3. What is market potential, and how can it be determined?

A3.
1) **Market potential is the demand for a specific product or service within a certain geographical area.**
2) **It can be determined by gathering and analyzing the following information.**
   a) **Number of people and their occupations**
   b) **Operating costs - not exceeding market potential of location**
   c) **Closeness of market; transportation costs**
   d) **Number of competitors**

        e) Profit of competitors
        f) Location of competitors relative to customers
    3) Information can be obtained by several methods and can be used to determine market potential.
        a) Visits to location
        b) Local census information
        c) Local chamber of commerce - to look at growth and past business history
        d) Real estate agents
        e) Individuals in the area

Ask students to discuss market potential and why it is important. Discuss why a business may fail if it does not accurately determine the market potential. Explain that some businesses may rely heavily on mail order business. Determining market potential for a mail order business is done in much the same way.

Q4. What factors should be considered when selecting an organizational structure for the agricultural business?

A4.
1) Length of time in business
2) Kind of service or product the business will provide
3) Capital requirements
4) Size of business
5) Cost of establishing and maintaining the business structure
6) Tax implications
7) Liability considerations

Ask students to discuss these factors. The manager should examine each organizational structure before considering the factors listed.

Q5. What legal requirements should the potential buyer be aware of?

A5.
1) Permits
    a) Use and occupancy
    b) Health
2) Licenses
    a) City or state
    b) Occupational
3) Zoning regulations

Ask students why it would be important to know and understand the legal requirements before starting an agricultural business.

Q6. What financial sources can be secured for starting an agricultural business?

A6.
1) Personal assets and savings
2) Gifts or loans from friends
3) Lending institutions
4) Corporations - shares
5) Partnerships - combining resources

Ask students where they might obtain the finances to start an agricultural business.

Q7. What groups are dealt with in agricultural business, and why are they important?

A7.
1) **Suppliers - Obtaining a contract with a reputable firm is crucial for the success of the business.**
2) **Customers - A good customer relations policy is needed to firmly establish a business.**
3) **Manager - The manager is responsible for organizing the activities of the business to insure that everything gets done on time.**
4) **Employees - They are important for carrying out the work of the business in a dependable and friendly manner. This will help insure good customer relations as well as the work getting done on time.**
5) **Financial institutions - They are needed to loan money to meet both short- and long-term needs.**

Ask students to discuss each of these groups and determine why they are important.

Q8. What kind of financial records should be kept?

A8.
1) **Income and expenses**
2) **Accounts payable and receivable**
3) **Inventory**
4) **Employee payroll**
5) **Sales tax records**
6) **Customer account records - especially for those who pay in cash**

Ask students what type of records they feel would be important to keep an agricultural business running smoothly.

Q9. What is involved in promoting products and services?

A9.
1) **Identify potential customers.**
2) **Determine advertising budget.**
3) **Outline advertising methods to be used.**
4) **Determine frequency of advertising.**
5) **Determine sales approach to be used.**

Ask students to name ways to promote products or services. Use examples of local advertising. Some businesses will try to coordinate starting their business with the new phone book. That way they are able to advertise their phone number sooner than if they waited until a few weeks after the phone book was printed.

F. Other activities

It is suggested that a local agricultural business operator visit with students about experiences in starting and operating an agricultural business.

G. Conclusion

The first step in establishing an agricultural business is to identify all applicable factors such as type of business, legal requirements, and location. Also, identify the markets available and the amount of competition. There are several factors that should be considered such as how much the land is worth and if the needed finances can be secured.

H. Competency.

Explain the factors involved in starting an agricultural business.

I. Answers to Evaluation

1. e
2. a
3. a

4. Answers should include three of the following:
Suppliers - Obtaining a contract with a reputable firm is crucial for the success of the business.
Customers - A good customer relations policy is needed to firmly establish a business.
Manager - The manager is responsible for organizing the activities of the business to insure that everything gets done on time.
Employees - They are important for carrying out the work of the business in a dependable and friendly manner. This will help insure good customer relations as well as the work getting done one time.
Financial institutions - They are needed to loan money to meet both short- and long-term needs.

5. Answers should include three of the following:
Income and expenses
Accounts payable and receivable
Inventory
Employee payroll
Sales tax records
Customer account records - especially for those who pay in cash

6. a. Permits
   b. Licenses
   c. Zoning regulations

UNIT II - BUSINESS MANAGEMENT Name ________________

Lesson 3: Starting an Agricultural Business Date ________________

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which factor(s) is important to consider when starting an agricultural business?

   a. Legal requirements
   b. Financing
   c. Market potential
   d. Promotion and advertising
   e. All of the above

2. Determining the market potential of a community __________..

   a. Involves gathering information about the local community
   b. Insures the success of the business
   c. Shows the relative supply of labor available
   d. Creates a feeling of goodwill with community members

3. How can market potential information be used in advertising?

   a. To identify customers
   b. To determine the advertising budget
   c. To determine frequency of advertising
   d. All the above

Complete the following short answer questions.

4. List three groups of people the agricultural business must deal with and tell why each one is important.

   a.

   b.

   c.

5. Identify three types of financial records that a business should keep.

   a.

   b.

   c.

6. What are the three types of legal requirements that may affect an agricultural business?

   a.

   b.

   c.

UNIT II - BUSINESS MANAGEMENT

Lesson 4: Using Contracts in Agriculture

Objective: The student will be able to identify and describe key components of contracts.

Study Questions

1. **What are contracts, and how can they be used in agriculture?**
2. **Define the key terms used in leases.**
3. **What are the most common kinds of leases?**
4. **What key points should be considered when making a contract?**
5. **What are some of the legal aspects concerning contracts?**
6. **What is an automatic renewable clause, and why is it important?**
7. **What is arbitration, and how can it be used?**
8. **What are the lessee's advantages and disadvantages in leasing?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.
2. Handouts
   - a) HO 4.1: Crop Share Lease
   - b) HO 4.2: Pasture Lease
   - c) HO 4.3: Cooperative Education Program Student Agreement

Teacher References

1. Steward, Jim; Raleigh Jobes. Farm and Ranch Business Management. Moline, IL: Deere and Company, 1985.
2. University of Missouri-Columbia Extension Division agricultural publications.
   - a) G00426: Farm Lease Agreement
   - b) G00428: Customary Farm Rental Agreements
   - c) G00520: Verbal Farm Rental Agreements Under Missouri Law
   - d) G00540: Leasing vs. Buying Equipment

TEACHING PROCEDURES

A. Review

B. Motivation

Several students in the class will already have entered contracts. Have them turn to the business agreement page of their record books. This page is a contract. The student is agreeing to do certain things; the teacher is agreeing to supervise the project, and the parents are aware of, or possibly assisting, the student in performing the agreement. Another agreement that students may be familiar with is the Cooperative Education Program Student Agreement (HO 4.1).

C. Assignment

D. Supervised study

E. Discussion

Q1. **What are contracts, and how can they be used in agriculture?**

A1.
1) **A contract is a verbal agreement or formal written document that is legally binding between two or more people or businesses.**
2) **A contract can be used to help reduce risk by agreeing on terms and conditions beforehand.**
3) **One common type of contract is the lease.**

Discuss the fact that contracts are really business agreements. Ask students to discuss how a contract might be used in agriculture.

Q2. **Define the key terms used in leases.**

A2.
1) **Lease is a form of contract transferring the use or occupancy of land, buildings, machinery, or equipment for some form of payment. A lease may be written or verbal.**
2) **Rent is income received from leasing property.**
3) **Lessee (tenant) is one who holds or has the use of property that is owned by another.**
4) **Lessor (landlord) is the owner of leased property.**

List the key terms of a contract on the board or overhead. Have students define these terms and discuss the definition.

Q3. What are the most common kinds of leases?

A3.
1) Land
2) Crop share
3) Livestock
4) Livestock share
5) Financial
6) Building and machinery

Ask students to discuss the most common types of leases. Discuss various situations that would make each type of lease advantageous to use.

Q4. What key points should be considered when making a contract?

A4.
1) Consider legal aspects.
2) Insure economic gain for both parties.
3) Agree on what records will be kept, and who will keep them.
4) Determine how differences in opinion will be resolved.
5) Determine who has responsibility for what jobs or enterprises.
6) Agree on the responsibility for maintaining buildings, facilities, and land fertility as well as how compensation for improvements will be handled.

Ask students to discuss the key points that should be considered when making a contract.

Q5. What are some of the legal aspects concerning contracts?

A5.
1) There is no substitute for good legal advice.
2) The contract should be in writing concerning major items.
    a) May be no more binding than an oral lease if not written properly
    b) May help avoid many misunderstandings
3) The body of the contract should include all applicable details.
    a) Statement of who furnishes what
    b) Statement of who pays for what
    c) Payment of rent
        (1) Terms of payment, including beginning and ending dates
        (2) Division of income
    d) Restrictions
    e) Method of ending contract

Ask students to discuss some of the legal aspects of contracts.

Q6. What is an automatic renewable clause, and why is it important?

A6.
1) The automatic renewable clause allows a short-term lease to be continued under the same conditions unless either the lessor or lessee notify the other party before a given deadline.
2) It is important primarily because there is less renegotiation time, and neither party is locked into a long-term lease.

Discuss advantages and disadvantages of an automatic renewable clause.

Q7. What is arbitration, and how can it be used?

A7. 1) **Arbitration is a method of settling differences between two or more parties such as lessor and lessee.**
    2) **Lessor can select a member of an arbitration committee; lessee can select one, and these two arbitrators can select one. Except for questions of law, the decisions of the committee are final and binding to the lessor and the lessee.**

Discuss the arbitration method and tie in the need for written leases to avoid misunderstanding. Have copies of good standard lease forms for students to complete. Most standard leases will have an arbitration clause. Discuss the importance of a lease containing this clause. Distribute HO 4.2 and 4.3.

Q8. What are the lessee's advantages and disadvantages in leasing?

A8. 1) **Advantages**
- a) **Financial**
    - (1) **Lower fixed cost**
    - (2) **More capital available**
    - (3) **Rent considered an expense which could possibly lower income tax**
    - (4) **Lower property tax**
- b) **Risks of obsolescence and faulty property shifted to the lessor**
- c) **Timing**
    - (1) **When use is occasional**
    - (2) **When capital expediture is large**

2) **Disadvantages**
- a) **Financial**
    - (1) **May lower borrowing power**
    - (2) **No gain from land appreciation**
- b) **Possible higher rental payments resulting from risks transferred to lessor**

Ask students to discuss whether they should lease or purchase?

F. Other activities

1. It is suggested that students complete some of the enclosed leases and develop their own leases with members of the class, faculty, or community. (HO 4.1 and HO 4.2)

2. Invite a local lawyer to visit with the class.

G. Conclusion

A lease is a contract which transfers the use or occupancy of land, buildings, machinery, or equipment from one person to another in consideration of a payment. All contracts should be in writing and very specific about all applicable details.

H. Competency

Identify and describe key components of contracts.

I. Answers to Evaluation

1. c
2. d
3. c
4. e
5. a
6. b
7. d

8. The automatic renewable clause reduces negotiation time between leasing periods without locking either party into a long-term lease. Either party can terminate the lease for the next period by notifying the other party before a set deadline. If no one says anything, then the lease automatically continues.

9. Arbitration is a method for settling differences between landlord and tenant. Each party selects a member for an arbitration committee. The two people selected choose a third person. This committee then decides how to settle the problem. Their decision is binding unless it is in conflict with the law.

UNIT II - BUSINESS MANAGEMENT Name ________________

Lesson 4: Using Contracts in Agriculture Date ________________

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which of the following statements is true of contracts?

   a. They must be in writing to be legal.
   b. They may be either written or verbal.
   c. They can be used to reduce risk.
   d. They are not binding.

2. Which of the following statements is true of leases?

   a. They may be written or verbal.
   b. They may be automatically renewable.
   c. They are a very common type of contract.
   d. All of the above

Match the word on the right with the definition on the left.

3. ___ A mutual understanding between two or more persons

4. ___ A form of contract transferring the use of occupancy of land, space, structures, or equipment in consideration of payment

5. ___ Income received from leasing real estate

6. ___ One who holds or has the use of real property that is owned by another

7. ___ Owner of leased property

a. Rent

b. Lessee

c. Agreement

d. Lessor

e. Lease

f. Arbitration

Complete the following short answer questions.

8. Why is the automatic renewable clause important?

9. What is arbitration, and how can it be used?

Crop Share Lease

HO 4.1

Irrigation Crop-Share or Crop-Share-Cash Farm Lease

This form can provide the landlord and tenant with a guide for developing an agreement to fit their individual situation. This form is not intended to take the place of legal advice pertaining to contractual relationships between the two parties. Because of the possibility that a farm operating agreement may be legally considered a partnership under certain conditions, seeking proper legal advice is recommended when developing such an agreement.

(North Central Regional Publication No. 106)

This lease is entered into this ____________ day of ________________________________, 19_____, between

____, landlord, of ____

____
(address)

____, spouse, of ____

____
(address)

hereafter known as "the landlord," and

____, tenant, of ____

____
(address)

____, spouse, of ____

____
(address)

hereafter known as "the tenant."

I. PROPERTY DESCRIPTION

The landlord hereby leases to the tenant, to occupy and use for agricultural and related purposes, the following described property:

____

____

____

consisting of approximately ____________ acres situated in ______________________________ County (Counties), ______________________________ (State) with all improvements thereon except as follows:

____

____

____

II. GENERAL TERMS OF LEASE

A. Time period covered. The provisions of this agreement shall be in effect for ________ year(s), commencing on the ______________________________ day of ______________________________, 19______. This lease shall continue in effect from year to year thereafter unless written notice of termination is given by either party to the other at least ______________ days prior to expiration of this lease or the end of any year of continuation.

B. Review of lease. A written request is required for a general review of the lease or for consideration of proposed changes by either party, at least ____________ days prior to the final date for giving notice to terminate the lease as specified in IIA.

C. Amendments and alterations. Amendments and alterations to this lease shall be in writing and shall be signed by both the landlord and tenant.

D. No partnership intended. It is particularly understood and agreed that this lease shall not be deemed to be nor intended to give rise to a partnership relation.

E. Transfer of property. If the landlord should sell or otherwise transfer title to the farm, he will do so subject to the provisions of this lease.

F. Right of entry. The landlord reserves the right for himself, his agents, his employees, or his assigns to enter the farm at any reasonable time to: a) consult with the tenant; b) make repairs, improvements, and inspections; and c) (after notice of termination of the lease is given) do plowing, seeding, fertilizing, and any other customary seasonal work, none of which is to interfere with the tenant in carrying out regular farm operations.

G. No right to sublease. The landlord does not convey to the tenant the right to lease or sublet any part of the farm or to assign the lease to any person or persons whomsoever.

H. Binding on heirs. The provisions of this lease shall be binding upon the heirs, executors, administrators, and successors of both landlord and tenant in like manner as upon the original parties, except as provided by mutual written agreement.

I. Landlord's lien for rent and performance. The landlord's lien provided by law on crops grown or growing shall be the security for the rent herein specified and for the faithful performance of the terms of the lease. If the tenant fails to pay the rent due or fails to keep the agreements of this lease, all costs and attorney fees of the landlord in enforcing collection or performance shall be added to and become a part of the obligations payable by the tenant hereunder.

J. Additional provisions.

____

____

III. LAND USE

A. General provisions. The land described in Section I will be used in approximately the following manner. If it is impractical in any year to follow such a land-use plan, appropriate adjustments will be made by mutual written agreements between the parties.

	Dry	Irrigated	
(1) Cropland			
(a) Corn			Acres
(b) Grain Sorghum			Acres
(c) Wheat			Acres
(d) Sugar Beets			Acres
(e) Silage			Acres
(f) Alfalfa			Acres
(g) Pasture			Acres
(h) Other:			Acres
			Acres
			Acres
			Acres
TOTAL ACRES			Acres

B. Restrictions. The maximum acres harvested as silage shall be ________ acres unless it is mutually decided otherwise:

The pasture stocking rate shall not exceed:

PASTURE IDENTIF.	
	________ acres/animal unit
	________ acres/animal unit
	________ acres/animal unit

(1000 pound mature cow is equivalent to one animal unit.)

Other restrictions are:

____

____

C. Government programs. The extent of participation in government programs will be discussed and decided on an annual basis. The course of action agreed upon should be placed in writing and be signed by both parties. A copy of the course of action so agreed upon shall be made available to each party.

IV. CROP-SHARE-CASH RENT AND RELATED PROVISIONS

A. General agreement. (1) The tenant agrees to pay as rent for the use of the land the share of crops shown in Table 1 of this section. The tenant also agrees to

Table 1.—Landlord's Share (% and/or $) of Crops and Crop Expenses

	Corn example	Corn	Grain sorghum	Small grain	
SHARE OF CROPS	50%				
SHARE OF CROP EXPENSES:					
Fertilizer:					
Materials	50%				
Application	50%				
Herbicide:					
Materials	50%				
Application					
Insecticide:					
Materials	50%				
Application					
Seed	50%				
Lime, rock phosphate*	100%				
Harvesting (per ac.)	$7.50				
Drying	50%				
Baling					
Delivery to:					
Storage/bu.					
Market/bu.	$ .07				
SHARE OF IRR. EXPENSES					
Well Repairs	100%				
Pump Repairs	100%				
Gear Head Rep.	100%				
Power Unit Rep.	100%				
System Repairs					
Land Maint.					
Irrigation Fuel					
Power Replace.					
System Replace.					
Labor					
Other:					

* Lime, rock phosphate, and other fertilizers having more than one year life paid by the tenant should be recorded in the compensation table in Section V-C-2.

furnish all labor, machinery, and cash operating expenses except for landlord's share (percent and/or dollar charge per unit) indicated in Table 1. (2) Other Provisions relative to Table 1.

____

____

____

B. Other crop-share-cash agreements.

1. Operating expenses. Additional agreements relative to the sharing of expenses are as follows:

____

____

____

2. Storage, landlord's crop. At the landlord's request, the tenant agrees to store as much of the landlord's share of the crops as possible, using storage space reserved by the landlord and not to exceed ________ percent of the storage space not specifically reserved.

3. Delivery of grain. The tenant agrees to deliver the landlord's share of crops at a place and at a time the landlord shall designate, not over ________ miles distance at the charge shown in Table 1 of this section. Additional agreements are:

____

____

____

4. Cash rent on non-shared items. The tenant agrees to pay cash rent annually for the use of the following non-shared items.

Table 2—Amount of Annual Cash Rent
(Complete at beginning of lease)

		Total
Pasture		$________
Hayland:	________________	$________
	________________	
Farmstead:	Dwelling	$________
	Service bldgs.	$________
Timber and waste		$________
Total cash rent		$________

Payment of cash rent: The tenant agrees to pay cash rent as follows:

$________ on or before _____ day of _____ (month)
$________ on or before _____ day of _____ (month)
$________ on or before _____ day of _____ (month)
$________ on or before _____ day of _____ (month)

If rent is not paid when due, the tenant agrees to pay interest on the amount of unpaid rent at the rate of ________ percent per annum from due date until paid.

5. Pasturing. The tenant will prevent damage to cropland and growing crops by livestock.

6. Home use. Tenant and landlord may take for home use the following kinds and quantities of jointly owned crops:

____

____

____

____

7. Buying and selling. The landlord and tenant will buy and sell jointly owned property according to the following agreement:

____

____

____

8. Division of property. At the termination of this lease, all jointly owned property will be divided or disposed of as follows:

____

____

____

V. OPERATION AND MAINTENANCE OF FARM

In order to operate this farm efficiently and to maintain it in a high state of productivity, the parties agree as follows:

A. The tenant agrees:

1. General maintenance. To provide the unskilled labor necessary to maintain the farm and its improvements during his tenancy in as good condition as it was at the beginning. Normal wear and depreciation and damage from causes beyond the tenant's control are expected.

2. Land use. Not to: a) plow pasture or meadowland, b) cut live trees for sale or personal use, or c) pasture new seedlings of legumes and grasses in the year they are seeded without consent of the landlord.

3. Insurance. Not to house automobiles, motor trucks, or tractors in barns, or otherwise violate restrictions in the landlord's insurance policies without written consent from the landlord. Restrictions to be observed are as follows:

____

____

____

____

4. Noxious weeds. To use diligence to prevent noxious weeds from going to seed on the farm. Treatment of the noxious weed infestation and cost thereof shall be handled as follows:

____

____

____

____

5. Addition of improvements. Not to: 1) erect or permit to be erected on the farm any nonremovable structure or building, b) incur any expense to the landlord for such purposes, or c) add electrical wiring, plumbing, or heating to any building without written consent of the landlord.

6. Conservation. Control soil erosion as completely as practicable; keep in good repair all terraces, open ditches, inlets and outlets of tile drains; preserve all established watercourses or ditches including grassed waterways; and refrain from any operation or practice that will injure such structures.

7. Damages. When he leaves the farm, to pay the landlord reasonable compensation for any damages to the farm for which he, the tenant, is responsible. Any decrease in value due to ordinary wear and depreciation or damages outside the control of the tenant are excepted.

8. **Costs of operation.** To pay all costs of operation except those specifically referred to in Sections IV, V-A-4, and V-B.

9. **Repairs.** Not to buy materials for maintenance and repairs in an amount in excess of $____________ within a single year without written consent of the landlord.

B. **The landlord agrees:**

1. **Loss replacement.** To replace or repair as promptly as possible the dwelling or any other building or equipment regularly used by the tenant that may be destroyed or damaged by fire, flood, or other cause beyond the control of the tenant or to make rental adjustments in lieu of replacements.

2. **Materials for repairs.** To furnish all material needed for normal maintenance and repairs.

3. **Skilled labor.** To furnish any skilled labor tasks which the tenant himself is unable to perform satisfactorily. Additional agreements regarding materials and labor are:

____

____

____

4. **Reimbursement.** To pay for materials purchased by the tenant for purposes of repair and maintenance in an amount not to exceed $____________ in any one year, except as otherwise agreed upon. Reimbursement shall be made within _______ days after the tenant submits the bill.

5. **Removeable improvements.** Let the tenant make minor improvements of a temporary or removable nature, which do not mar the condition or appearance of the farm, at the tenant's expense. He further agrees to let the tenant remove such improvements even though they are legally fixtures at any time this lease is in effect or within _______ days thereafter, provided the tenant leaves in good condition that part of the farm from which such improvements are removed. The tenant shall have no right to compensation for improvements that are not removed except as mutually agreed.

6. Compensation for crop expenses. To reimburse the the tenant at the termination of this lease for field work done and for other crop costs incurred for crops to be harvested during the following year. Unless otherwise agreed, current custom rates for the operations involved will be used as a basis of settlement.

C. Both agree:

1. Not to obligate other party. Neither party hereto shall pledge the credit of the other party hereto for any purpose whatsoever without the consent of the other party. Neither party shall be responsible for debts or liabilities incurred, or for damages caused by the other party.

2. **Capital improvements.** Costs of establishing hay or pasture seedings, new conservation structures, improvements (except as provided in Section V-B-5), or of applying lime and other longlived fertilizers shall be divided between landlord and tenant as set forth in the following table. The tenant will be reimbursed by the landlord either when the improvement is completed, or the tenant will be compensated for his share of the depreciated cost of his contribution when he leaves the farm based on the value of the tenant's contribution and depreciation rate shown in the following table. (Cross out the portion of the preceding sentence which does not apply.)

   Rates for labor, power, and machinery contributed by the tenant shall be agreed upon before construction is started.

3. Mineral rights. Nothing in this lease shall confer upon the tenant any right to minerals underlying said land, but same are hereby reserved by the landlord together with the full right to enter upon the premises and to bore, search, and excavate for same, to work and remove same, and to deposit excavated rubbish, and with full liberty to pass over said premises with vehicles and lay down and work any railroad track or tracks, tanks, pipelines, power lines, and structures as may be necessary or convenient for the above purpose. The landlord agrees to reimburse the tenant for any actual damage he may suffer for crops destroyed by these activities and to release the tenant from obligation to continue farming this property when development of mineral interfers materially with the tenant's opportunity to make a satisfactory return.

VI. ARBITRATION OF DIFFERENCES

Any differences between the parties as to their several rights or obligations under this lease that are not settled by mutual agreement after thorough discussion, shall be submitted for arbitration to a committee of three disinterested persons, one selected by each party hereto and the third by the two thus selected. The committee's decision shall be accepted by both parties.

Compensation for Improvements Table

Type of improvement	Date to be completed	Estimated total cost (dollars)	Proportion to be contributed by tenant			Total value of tenant's contrib. (dollars)*	Rate of annual depreciation
			Material	Unskilled labor	Mach.		
Irri. Well		$	%	%	%	$	%
Underground Pipe		$				$	
Land Dev.		$				$	
Tailwater Structures		$				$	
Power Lines		$				$	
Other		$				$	

* To be recorded when improvement is completed.

HO 4.1 (Continued)

Executed in duplicate on the date first above written:

______________________	______________________
(tenant)	(landlord
______________________	______________________
(tenant spouse)	(landlord spouse)

STATE OF ______________________ }
COUNTY OF ______________________ } S:

On this ______________ day of ______________________ A.D., 19_____, before me, the undersigned, a Notary Public in said State, personally appeared ______________________

______________________, ______________________, ______________________,

and ______________________, to me known to be the identical persons named in and who executed the foregoing instrument, and acknowledged that they executed the same as their voluntary act and deed.

____
(Notary Public)

Programs and activities of the Cooperative Extension Service are available to all potential clientele without regard to race, color, sex, national origin, or handicap.

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In cooperation with NCR Educational Materials Project

Issued in furtherance of Cooperative Extension work, Acts of Congress of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture and Cooperative Extension Services of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. Fred D. Sobering, Director of Cooperative Extension Service, Kansas State University, Manhattan, Kansas 66506.

Pasture Lease

(North Central Regional Publication 109)

This PASTURE LEASE form can provide the landlord and tenant with a guide for developing an agreement to fit their individual situation. This form is not intended to take the place of legal advice pertaining to contractual relationships between the two parties. Because of the possibility that an operating agreement may be legally considered a partnership under certain conditions. seeking proper legal advice is recommended when developing such an agreement.

This lease is entered into this ____________ day of ________________________________, 19_____, between

________________________________, landlord, of ________________________________
(pasture owner)

____
(address)

________________________________, spouse, of ________________________________

____
hereafter known as "the landlord," and (address)

________________________________, tenant, of ________________________________
(livestock owner)

____
(address)

________________________________, spouse, of ________________________________

____
hereafter known as "the tenant." (address)

I. PROPERTY DESCRIPTION

The landlord hereby leases to the tenant, to occupy and use for pasture purposes, the following described property:

____

____

____

____

____

consisting of approximately ____________ acres situated in ______________________________ County (Counties), ______________________________ (State) and on any other land which the landlord may designate by mutual written agreement.

II. GENERAL TERMS OF LEASE

A. Term.—[If a continuing lease is desired, use paragraph (1) and strike out (2).]

(1) Continuing Lease—The term of the lease shall be ________ year(s), commencing on the ____________ ____________ day of ____________________, 19_____, and shall continue in effect from year to year thereafter (as an annual lease) unless written notice of termination is given by either party to the other at least ________________ days prior to expiration of this lease or the end of any year of continuation. If a definite term is desired, use paragraph (2) and strike out paragraph (1). No notice of termination is necessary if paragraph (2) is used.)

(2) Annual Lease—The term of this lease shall be ________________ year(s), commencing on the ________________ day of ____________________, 19_____, and ending on the ________________ day of ________________, 19_____.

B. Review of lease.—A request for general review of the lease may be made, by either party at least ____________ days prior to the final date for giving notice to terminate the lease.

C. Amendments.—Amendments and alterations to this lease shall be in writing and shall be signed by both the landlord and tenant.

D. No partnerships created.—This lease shall not be deemed to give rise to a partnership relation, and neither party shall have authority to obligate the other without written consent, except as specifically provided in this lease.

E. Binding on Heirs.—The terms of this lease shall be binding upon the heirs, executors, administrators, and successors of both landlord and tenant in like manner as upon the original parties, except as provided by mutual written agreement otherwise.

F. Transfer of property.—If the landlord should sell or otherwise transfer title to the farm, he will do so subject to the provisions of this lease.

G. Right of entry.—The landlord reserves the right of himself, his agents, his employees, or his assigns to enter the farm at any reasonable time for purposes (a) of consultation with the tenant; (b) of making repairs, improvements, and inspections; and (c) after notice of termination of the lease is given, of performing customary seasonal work, none of which is to interfere with the tenant in carrying out regular operations.

H. Additional agreements regarding term of lease:

____

____

____

____

____

____

I. Animal units (maximum allowable)—Not more than ________ animal units shall be kept in the pasture at any one time without the express written consent of the landlord. Deliberate violation of this provision shall constitute grounds for termination of this lease. (Each 1,000 pounds of average weight shall be one animal unit. If the pasture owner and the owner of the livestock prefer, they can use the following basis for calculating animal units: 1 bull, 1.25 animal units; one 1,000-pound cow, 1 animal unit; 1 yearling steer or heifer, .75 animal unit; calf, 6 months to 1 year, .5 animal unit; calf, 3 to 6 months, .3 animal unit; sheep, 5 per animal unit; horse, 1.25 animal units.)—

Stocking Rate	Number Head	Number Animal Units
Bulls		
Cows		
Yearling steers		
Yearling heifers		
Calves, 6 mos.-1 year		
Calves, 3-6 mos.		
Other		

III. OPERATION AND MAINTENANCE

A. The livestock owner agrees:

(1) Not to pasture livestock to be breachy. Should any animal be found outside the pasture on at least three occasions, the pasture owner may request its removal.

(2) Not to assign his right and duties under this lease without the written consent of the pasture owner.

(3) Not to put any cattle in pasture without getting specific approval from the pasture owner in advance regarding number, health, sex, breed, and age.

(4) Agrees to furnish health certificate as follows:

B. Both agree:

(1) Not to obligate other party. Neither party hereto shall pledge the credit of the other party hereto for any purpose whatsoever without the consent of the other party. Neither party shall be responsible for debts or liabilities incurred, or for damages caused by the other party.

(2) Responsibilities.—Additional responsibilities for each party shall be divided as follows:

	Landlord	Tenant
Inspect fences not less than once per ________.		
Furnish labor for repair of fences.		
Furnish materials for repair of fences.		
Supervise supply of water to livestock.		
Furnish labor for repair of water system.		
Materials for repair of water system.		
Furnish salt and mineral.		
Count livestock not less than once per ________.		
Return stray animals to pasture.		
Call veterinarian in case of emergency.		
Pay veterinary expenses.		
Provide loading and unloading facilities.		
Furnish supplementary feed, if needed.		
Notify other party of shortage in count.		
Provide facilities for fly control.		
Keep fly control facilities in working order.		
Liability Insurance.		

(3) Additional agreements:

IV. RENTAL CALCULATIONS AND PAYMENT SCHEDULE

(Use Method I, II or III and Strike Out the Two Methods Not Used)

METHOD I—The tenant owner agrees to pay $________ per acre for use of the property described in paragraph I. Total rent of $________ shall be paid as follows.

$________ on or before ______ day of ________ (month),
$________ on or before ______ day of ________ (month),
$________ on or before ______ day of ________ (month),
$________ on or before ______ day of ________ (month),

If rent is not paid when due, the tenant agrees to pay interest on the amount of unpaid rent at the rate of ________ percent per annum from the due date until paid.

Rental adjustment—Additional agreements in regard to rental payment:

METHOD II—The livestock owner agrees to pay the following rates: (The period may be by the month, pasture season or year.)

	Number	X	Rental Rate/Period	=	Total Rent/Period
Bulls	________	X	$________	=	$________
Cows	________	X	$________	=	$________
Yearling steers	________	X	$________	=	$________
Yearling heifers	________	X	$________	=	$________
Calves, 6 mos.-1 year	________	X	$________	=	$________
Calves, 3-6 mos.	________	X	$________	=	$________
Other	________	X	$________	=	$________
Total Rent					$________

The minimum rent shall be $________. Such rental shall be required regardless of whether or not livestock are actually being pastured. The Total Rent of $________ shall be paid as follows.

$______ on or before ______ day of ______ (month),
$______ on or before ______ day of ______ (month),
$______ on or before ______ day of ______ (month),
$______ on or before ______ day of ______ (month),

If rent is not paid when due, the tenant agrees to pay interest on the amount of unpaid rent at the rate of ______ percent per annum from the due date until paid.

Rental adjustment—Additional agreements in regard to rental payment:

____
____
____
____
____
____
____
____
____
____

METHOD III—Other Rental Arrangements (Share of gain-etc.)

____
____
____
____
____
____
____

VI. ARBITRATION OF DIFFERENCES

Any differences between the parties as to their several rights or obligations under this lease that are not settled by mutual agreement after thorough discussion, shall be submitted for arbitration to a committee of three disinterested persons, one selected by each party hereto and the third by the two thus selected. The committee's decision shall be accepted by both parties.

Executed in duplicate on the date first above written:

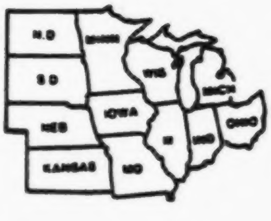
______________________________	______________________________
tenant (Livestock owner)	landlord (Pasture owner)
______________________________	______________________________
(tenant spouse)	(landlord spouse)

COUNTY OF ______________________________ }
} **SS:**
STATE OF ______________________________ }

On this ____________________ day of ______________________ A.D., 19_____, before me, the undersigned, a Notary Public in said State, personally appeared ______________________ ____________________, ____________________, ____________________, and ______________________, to me known to be the identical persons named in and who executed the foregoing instrument, and acknowledged that they executed the same as their voluntary act and deed.

____
Notary Public

Programs and activities of the Cooperative Extension Service are available to all potential clientele without regard to race, color, sex, national origin, or handicap.



In cooperation with NCR Educational Materials Project

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COOPERATIVE EDUCATION PROGRAM

STUDENT AGREEMENT

The ___________ program in Cooperative Education is planned to develop a student academically, economically, and socially. To meet the goal, there are responsibilities the student must realize and must agree to cooperate in carrying them out to the fullest extent. As a participant in the program, are you willing to assume these responsibilities in the program?

1. To realize that I am under the jurisdiction of the school throughout the school day and my approved working hours
2. To know that the coordinator is the recognized authority for making adjustments or changes in the training on the job
3. To know that it is my responsibility throughout the year to be well-dressed and well-groomed both in school and on the job
4. To carry out my training on the job in such a manner that I will reflect credit upon myself and upon the Cooperative Vocational Education program.
5. To perform all my duties in a commendable manner and perform related study assignments with earnestness and sincerity
6. To work toward the group and individual achievement goals
7. To be regular in attendance in school and on the job (This includes days on the job when school is not in session such as teachers' meetings, Christmas vacation, etc.)
8. To be on time at school and on the job
9. To notify my employer as soon as I know that I will be absent from work
10. To notify the coordinator as early in the day as possible on days that I am absent from school
11. To know that if I am absent from school I must also be absent from work on that day
12. To know that if I use a car as transportation to and from my work I will observe all traffic regulations and school policies with extreme care. (Any infraction of the traffic laws may be sufficient cause to terminate the use of my car in connection with Cooperative Vocational Education program.)
13. To conduct myself in a satisfactory manner, both on the job and in the classroom, or my training may be discontinued, and I may be removed from the program

14. To know that if I am removed from the program due to failure either in the class instruction or work experience, I will receive a failing grade for the program and will lose both credits

15. To understand that if I am required to leave school because of any disciplinary reasons, I understand that I cannot report to my training station, as this is the same as any other classroom subject in which I am enrolled

16. To agree not to quit or change jobs without first talking the situation over with my parents and coordinator

17. To discuss my future plans with my coordinator and the high school counselor

18. To place into a savings plan 10 percent or more of my earned wages to help me reach my goals

19. To keep my coordinator informed of any problems that may confront me in school or on the job

20. To keep all matters of business in strict confidence

I fully understand the above statements, and I agree to cooperate in carrying them out to the fullest extent.

Date ___________ School Year 19 __ - 19 __

Student's Signature ______________________

Parent's Signature ______________________

Principal's Signature ____________________

Coordinator's Signature ___________________

Adapted from information provided by the Chillicothe Vocational Agriculture Department, Chillicothe, Mo.

UNIT II - BUSINESS MANAGEMENT

Lesson 5: Business Procedures

Objective: The student will be able to explain the importance of business procedures.

Study Questions

1. **What are business procedures?**
2. **Why are business procedures needed?**
3. **What are some different types of reports needed in agribusiness?**
4. **Why do agribusinesses need different records than farmers?**
5. **What are warranties and guarantees?**
6. **What procedures should be used in dealing with guarantees and warranties?**

Student Reference

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.

Teacher References

1. Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, Unit VII, 1984.
2. Lee, Delene W.; Jasper S. Lee. Agribusiness Procedures and Records. New York: McGraw-hill Book Company, 1980.
3. Miller, Larry. Selling in Agribusiness. 1st ed. New York: McGraw-Hill, 1979.

Lesson 5: Business Procedures

TEACHING PROCEDURES

A. Review

B. Motivation

Ask students what would happen if there were no set way of doing business within a company. What would happen if the business treated customers and suppliers one way today and the opposite way tomorrow? Would this be an effective way to manage a business?

C. Assignment

D. Supervised study

E. Discussion

Q1. **What are business procedures?**

A1. **Business procedures are customary or established methods of managing business activities.**

Ask students to discuss what business procedures are.

Q2. **Why are business procedures needed?**

A2. **Business procedures provide an effective and efficient way of managing the following important business activities so all persons involved are treated equal.**
  - **a) Communications**
  - **b) Billing and credit collection**
  - **c) Merchandise control and inventory**
  - **d) Keeping records**
  - **e) Preparing reports**
  - **f) Storing and retrieving information**
  - **g) Warranty, guarantee, and returned products**

Ask students to discuss the importance of having established business procedures.

Q3. **What are some different types of reports needed in agribusiness?**

A3. **1) Financial statements**
  - **a) Balance sheet - A balance sheet is a snapshot of the asset and liability position of a business at one point in time. It is also called a net worth statement.**
  - **b) Income statement - It is a listing of revenues and expenses and resulting net income for a period of time, also called profit/loss statement.**

        c) Statement of owner's equity - This statement details changes in owner's equity for the period.
    2) Management statements
        a) The cash flow shows the timing of income and expenses.
        b) The inventory statement summarizes the flow of inventory.
        c) Sales reports list sales for the period.

Ask students to discuss why each of the six types of statements is important.

Q4. **Why do agribusinesses need different records than farmers?**

A4. 1) Agribusinesses have more people handling money, more frequent sales, and more customers.
2) Customers keep records for the farmer but not for agribusinesses.

Agribusiness records are much more complex than farming records.

Q5. **What are warranties and guarantees?**

A5. 1) Warranty - written or implied promise that a product is free of defects and will perform as specified under normal usage conditions
2) Guarantee - written or implied promise that the buyer will receive a benefit from using the product or service such as reduced heating bills or faster rate of gain

Ask students to discuss why guarantees and warranties are important to the agribusiness and to the customers.

Q6. **What procedures should be used in dealing with guarantees and warranties?**

A6. 1) The business should have a set policy on handling guarantees and warranties so all customers are treated equal.
2) Guarantees and warranties should be honored if there is proof that the product failed to perform as it was meant to and the customer has proof of purchase.
3) Exact policies and procedures will vary between businesses. A set policy is a good way to promote good public relations.

Ask students why it is important to have set business procedures.

F. Other activities

Invite a certified public accountant to speak to the class on the need for keeping accurate, detailed records in an agribusiness.

G. Conclusion

Business procedures are customary or established methods of conducting business. Good business procedures allow smooth business transactions to occur in an efficient, productive manner. Set business procedures insure equal treatment for the customer.

H. Competency

Explain the importance of business procedures.

I. Answers to Evaluation

1. b
2. d
3. d
4. a
5. b
6. d

UNIT II - BUSINESS MANAGEMENT Name ________________

Lesson 5: Business Procedures Date ________________

EVALUATION

Circle the letter that corresponds to the best answer.

1. Business procedures are needed to ______________.

   a. Allow employees to handle situations as they see fit
   b. Provide an effective and efficient way of managing business activities
   c. Satisfy the customer
   d. Satisfy the owner

2. How can records be used?

   a. For inventory control
   b. To increase business efficiency
   c. For financial analysis
   d. All the above

3. Why is it important to have a policy on guarantees and warranties?

   a. To treat all customers equal
   b. To avoid confusion if a bad product was sold
   c. To promote good public relations
   d. All the above

4. Which of the following statements is false?

   a. Customers keep records for agribusinesses not farmers.
   b. Agribusinesses have more people handling money than farmers.
   c. Agribusinesses have more frequent sales than farmers.
   d. Farmers have less customers than agribusinesses.

5. Which of the following is a type of management statement?

   a. Statement of owner's equity
   b. Inventory statement
   c. Income statement
   d. Balance sheet

6. A financial statement that is a snapshot of the asset and liability position of a business is a(an) ______________.

   a. Statement of owner's equity
   b. Inventory statement
   c. Income statement
   d. Balance sheet

UNIT II - BUSINESS MANAGEMENT

Lesson 6: Agribusiness Records

Objective: The student will be able to explain the importance of agribusiness records.

Study Questions

1. **Why do agribusinesses need records?**
2. **What are the three basic parts of an accounting system?**
3. **What is a credit and a debit?**
4. **What are three special journals kept by agribusinesses and how do they differ?**
5. **What is double entry accounting and why should businesses use it?**

Student Reference

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.

Teacher References

1. Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.
2. Lee, Delene W.; Jasper S. Lee. Agribusiness Procedures and Records. New York: McGraw-Hill Book Company, 1980.
3. Niswonger, C. Rollin; Philip E. Fess. Accounting Principles. 12th ed. Cincinnati: South-Western Publishing Co., 1977.

Lesson 6: Agribusiness Records

TEACHING PROCEDURES

A. Review

B. Motivation

Ask the students how often they make entries in their record books. Are the entries made at the time the transaction occurs or do the students wait until shortly before the books are graded to update their records? Agricultural businesses must update their records consistently due to the volume of transactions and the amount of money involved. If an agricultural business only updated its records periodically it would have a tremendous backlog of paper work. The business would also have more difficulty in analyzing different types of business transactions.

C. Assignment

D. Supervised study

E. Discussion

Q1. **Why do agribusinesses need records?**

A1. **1) To know what has happened in the past**
2) To make decisions for the future
3) To report to outsiders
  a) Internal Revenue Service
  b) Government agencies
  c) Owners
  d) Lenders

Ask students why it is important to keep accurate records. Records are data kept today so that later the numbers can be analyzed, reports developed and management decisions made.

Q2. **What are the three basic parts of an accounting system?**

A2. **1) Journal - It is a record of original entries showing debits and credits in chronological order.**
2) Account - It is a listing for a unit. It has a beginning balance, additions, deductions, and an ending balance.
3) General ledger - It is the collection of all accounts.

The student should become familiar with these terms. All businesses will have a general journal and two or more special journals. For example, a firm might have four special journals: cash receipts, cash disbursements, purchases, and sales, plus a general journal in which all other transactions are listed.

Q3. What is a credit and a debit?

A3.
1) Credit - an entry on the right-hand side of an account
2) Debit - an entry on the left-hand side of an account

Discuss the difference between a credit and a debit. Credits and debits should not be thought of plus or minus.

Q4. What are three special journals kept by agribusinesses and how do they differ?

A4.
1) Cash receipts journal - provides a chronological list of cash received
2) Cash disbursements journal - provides a chronological list of cash disbursed
3) Purchases journal - provides a chronological list of items purchased on credit

Discuss the different journals used by agribusiness.

Q5. What is double entry accounting and why should businesses use it?

A5.
1) Double-entry accounting is a record keeping system in which all transactions are recorded in journals; once as a credit and once as a debit.
2) Double entry accounting is used to allow for error checks. Credits and debits must offset each other or there is an error.

Discuss double entry accounting. Explain to students how this system can be checked for errors.

F. Other activities

It is suggested that students be taken on a trip to a business to discuss the record keeping system.

G. Conclusion

Accurate records management is an essential part of any business. The use of records can help increase the income, thus increasing profit.

H. Competency

Explain the importance of agribusiness records.

I. Answers to Evaluation

1. b
2. d
3. c
4. c
5. a

173

6. The answer should include two of the following:
   To know what happened in the past
   To make decisions for the future
   To report to outsiders
7. Offset each other, equal, balance
   (The instructor will need to determine if the answer is correct.)

Name ______________

Lesson 6: Agribusiness Records

Date ______________

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which is a chronological list of items purchased on credit?

   a. Cash disbursements journal
   b. Purchases journal
   c. General ledger
   d. Account

2. Which is a listing for a unit?

   a. Cash disbursements journal
   b. Purchases journal
   c. General ledger
   d. Account

3. Which of the following is always correct about an entry on the right-hand side of an account?

   a. It is a plus.
   b. It is a minus.
   c. It is a credit.
   d. It is a debit.

4. A recordkeeping system that has a debit and credit for each transaction is called ______________.

   a. Accounting
   b. Single entry accounting
   c. Double entry accounting
   d. Business accounting

5. A cash receipts journal provides a chronological list of __________________ received.

   a. Money
   b. Bills
   c. Merchandise
   d. Credit

Complete the following short answer questions.

6. List two reasons why records should be kept.

   a.

   b.

7. Total debits and total credits should ___________.

Lesson 7: Managing Inventory and Determining Selling Price

Objective: The student will be able to describe how to manage inventory and how to determine the selling price of merchandise.

Study Questions

1. **Define inventory.**
2. **What are the two types of inventory, and how do they differ?**
3. **What factors are important in managing inventory?**
4. **How is inventory managed?**
5. **How can inventory losses be reduced?**
6. **What strategies are used to determine selling price?**
7. **What are the types of discounts used by agricultural businesses?**

Student Reference

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.

Teacher References

1. Lee, Delene W.; Jasper S. Lee. Agribusiness Procedures and Records. New York: McGraw-Hill Book Company, 1980.
2. Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.

Lesson 7: Managing Inventory and Determining Selling Price

TEACHING PROCEDURES

A. Review

B. Motivation

Bring a food product with a bar code on the packaging to class. Show the bar code to students. Ask students if they have made purchases at a store that uses the bar code to record prices at the cash register. Explain to students that the bar code not only tells the price of the item, but it automatically identifies what the item is. This allows the store to keep very accurate records of sales and inventory with a minimal amount of labor.

C. Assignment

D. Supervised study

E. Discussion

Q1. **Define inventory.**

A1. **Inventory is the amount of merchandise on hand including fixtures, machines, and raw or finished products.**

Ask students to define inventory. Explain why an inventory is needed in an agricultural business.

Q2. **What are the two types of inventory, and how do they differ?**

A2.
1) **Perpetual - written or computerized record taken from sales slips and purchase records**
2) **Physical - actual count taken by hand**

Ask students to describe the two main types of inventory and to explain how they differ.

Q3. **What factors are important in managing inventory?**

A3.
1) **Customer preferences**
2) **Seasonal demands**
3) **Inventory turnover rate**
4) **Past inventory records**
5) **Anticipated price changes**

Discuss how these factors can help a manager determine what and how much to keep in inventory.

Q4. How is inventory managed?

A4. 1) Keep computer records of what is received and shipped. The following steps should be completed after receiving an order of merchandise.
    a) Count items.
    b) Inspect the merchandise.
    c) Update records.
2) Monitor inventory turnover.
3) Consider opportunity costs.
4) Have an efficient storage system.
5) Use systematic purchasing steps so orders are received in time.

Ask students why it is important to manage inventory properly. Discuss the importance of each of the factors used in inventory management.

Q5. How can inventory losses be reduced?

A5. 1) Reduce employee theft and shoplifting.
2) Reduce damage or spoilage loss.
    a) Handle inventory carefully.
    b) Rotate inventory.

Profits can be lost easily by inventory losses. Ask students what might be done to prevent losses of inventory in an agricultural business.

Q6. What strategies are used to determine selling price?

A6. 1) Cost plus markup
2) Suggested retail price
3) Loss leader - selling some products below cost to attract customers to the store; goal of recapturing loss on other items
4) High markup items - items bought on impulse often placed in strategic places such as the check-out line at a grocery store
5) Clearance pricing
6) Discounts

Ask students to describe why the selling price on merchandise is important to agricultural businesses. Ask them to list the factors that help determine what the selling price should be. Review how the economic principle of supply and demand will affect pricing decisions.

Q7. What are the types of discounts used by agricultural businesses?

A7. 1) Cash discounts - up to 2 to 3 percent
    a) Given for paying cash at time of purchase
    b) Used because business can reinvest money quickly
    c) Figured after all other discounts have been applied
2) Quantity discounts - volume purchases
3) Bulk discounts - non-prepackaged purchases
4) Early season discounts - ordered before season used
    a) Saves storage space
    b) Helps the business to plan quantity needed

Ask students to discuss the different kinds of discounts. Discounts may appear on sales ticket as terms of sale. Terms of sale is used to show amount of discount and how long it applies.

EXAMPLE: "2/10 net 30" means if paid within 10 days of shipment, the buyer will receive a 2 percent discount; if not paid by then, the balance is due in 30 days.

F. Other activities

It is suggested that students be taken on a field trip to a business or agricultural business.

G. Conclusion

To maintain customer satisfaction and to reduce overhead costs, it is essential to maintain a good inventory management system and to price merchandise at a level that will assure profit, yet encourage buying.

H. Competency

Describe how to manage inventory and determine selling price.

I. Answers to Evaluation

1. a
2. d
3. e
4. d
5. c
6. c

UNIT II - BUSINESS MANAGEMENT

Lesson 7: Managing Inventory and Determining Selling Price

Name _______________

Date _______________

EVALUATION

Circle the letter that corresponds to the best answer.

1. Perpetual inventory is _____________.

   a. A written record taken from sales slips and purchase orders
   b. Actual count taken by hand
   c. What the agricultural business has in stock
   d. None of the above

2. What should be done after receiving an order of merchandise?

   a. Count items.
   b. Inspect the merchandise.
   c. Update records.
   d. All the above

3. Which of the following would not be used in managing inventory?

   a. Keep careful records of what is received and shipped.
   b. Be aware of opportunity costs.
   c. Replace items as the business sells them.
   d. Have a good storage system.
   e. Maintain the same quantity of each item the year round

4. Good inventory management would include _____________.

   a. Taking an occasional physical inventory
   b. Reviewing past inventory records as time allows
   c. Recognizing opportunity costs
   d. Keeping careful and accurate inventory records

5. Why would an agribusiness offer a discount for cash puchase?

   a. To reduce record keeping
   b. To help the business to plan quantity needed
   c. So that money can be reinvested more quickly
   d. To draw new customers

6. What is meant by a loss leader?

   a. Selling items at cost
   b. Selling items at a high markup
   c. Selling items below cost
   d. Clearance pricing

Lesson 8: Agricultural Business Customer Transactions

Objective: The student will be able to explain how to handle customer transactions.

Study Questions

1. **What is sales tax, and how is it collected?**
2. **What does tax exempt mean, and how is it handled?**
3. **How should the employee make change?**
4. **What are the benefits to the agricultural business of using checks?**
5. **What procedures should be followed in accepting checks?**
6. **What procedures should be followed in credit card sales?**
7. **What procedures should be followed when accepting sales on account?**
8. **Why are customer relations important to the agricultural business?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.
2. Handouts
   - a) HO 8.1: Sample City Sales Tax Table
   - b) HO 8.2: Exempt Sales
   - c) HO 8.3: Taxable Sales
3. Assignment Sheet
   - a) AS 8.1: Problems in Figuring Sales Tax

Teacher References

1. Miller, Larry. Selling in Agribusiness. 1st ed. New York: McGraw-Hill, 1979.
2. Lee, Delene W.; Jasper S. Lee. Agribusiness Procedures and Records. New York: McGraw-Hill Book Company, 1980.
3. Business Procedures and Records. Ohio State University: Agricultural Education Services, 1977.

Lesson 8: Agricultural Business Customer Transactions

TEACHING PROCEDURES

A. Review

In addition to reviewing the previous lesson, it may be helpful to review business procedures from Lesson 5. Most businesses will have certain procedures for handling customer transactions.

B. Motivation

Ask students if they or their parents have ever been given the wrong change after a purchase or been charged the wrong price. Maybe they have encountered a salesperson who did not know the policy of handling discounts, checks, or charge cards. One of the main goals of any business is to keep customers happy and satisfied so they will come back.

C. Assignment

D. Supervised study

E. Discussion

QI. What is sales tax, and how is it collected?

AI. 1) Sales tax is tax charged on the purchase price of most goods.
2) It is made of state, county, and city sales tax.
3) The business will collect sales tax and send that money to the state department of revenue.

Ask students what sales tax is, and explain to them how it is collected. The collection system should reinforce the need for a good record keeping system. Refer to HO 8.1.

NOTE: Tax rates may change from year to year and between locations. These were the current rates when this guide was prepared:

Missouri state sales tax includes the following.
  General sales tax 3%
  Education 1%
  Conservation .125%
  Parks and recreation .10%
City and county sales tax vary, but usually do not exceed 2%.
Transportation tax varies from 0 to 1%.

Q2. What does tax exempt mean, and how is it handled?

A2.
1) No sales tax is paid on exempt items.
2) Item or status of purchaser may affect sales tax exemption.
    a) Production items
    b) Usage of item
    c) Sales for direct consumption
    d) Tax exempt groups
        1) Blanket certificate - on file at agricultural business to show tax exempt status for all purchases at that business
        2) Unit certificate - used to show tax exempt status for specified purchase only

Ask students what tax exemption means and why it is important. Discuss HO 8.2 and 8.3 with students. Discuss why the usage of an item may affect whether it is tax exempt. Have students complete AS 8.1.

Q3. How should the employee make change?

A3.
1) State amount of the purchase and the amount received.
2) Place amount received where customer can see it to avoid any confusion.
3) Use addition method of making change.
4) Package merchandise and give to customer along with receipt.
5) Place money in proper place inside the cash register.
6) Handle requests such as change after the above steps are done.

Discuss with students the proper way to make change and why it is important to follow this procedure.

Q4. What are the benefits to the agricultural business of using checks?

A4.
1) Paying bills with checks
    a) Checks help make record keeping easier.
    b) A canceled check provides evidence of payment.
    c) Checks are usually more convenient than cash.
2) Accepting checks for payment
    a) Checks help reduce the chance of loss or theft of cash.
    b) Checks are convenient for customers.

Ask students to discuss benefits of using checks. Note that the disadvantage of accepting checks is the risk of receiving bad checks.

Q5. What procedures should be followed in accepting checks?

A5.
1) Follow the policy of the business.
2) Check the date.
3) Compare the amount in figures with the written amount.
4) Check the signature with the name on the check.
5) Make sure the check is made out to the business.
6) Ask for identification and compare it with the name and address on the check.
7) Call the manager if unsure.

8) **Initial the check.**
9) **Treat it as a cash sale.**
10) **Stamp check for deposit only.**

Discuss the importance of following proper procedure for accepting checks.

Q6. What procedures should be followed in credit card sales?

A6.
1) **Verify card.**
    - a) **Check amount of purchase against the credit card limit.**
    - b) **Check the card against the list for stolen cards.**
    - c) **Check the expiration date.**
2) **Imprint sales slip with credit card on imprinter machine.**
3) **Have customer sign slip, compare with signature on card.**
4) **Give the customer their card and appropriate copy of sale slip.**
5) **Destroy carbon.**

Ask students how to record credit card sales. It may be helpful to locate an imprinter machine and credit card sales slip. Demonstrate proper procedure for credit card sales.

Q7. What procedures should be followed when accepting sales on account?

A7.
1) **Check to see if the customer has an account and that the account is not over the limit.**
2) **Follow established policy concerning who can charge on the customer's account.**
3) **Record complete description of charged items along with terms and conditions on sales ticket.**
4) **Have customer sign sales ticket; check signature.**
5) **Give the customer the appropriate copy of the sales ticket.**
6) **Record the sales ticket in the proper ledgers at the end of the day.**
7) **Follow up the transaction with normal billing procedures.**
8) **Credit the account when the payment is received.**

Many customers will purchase items on account because it is convenient. This allows them to make purchases when they need items and pay later when money is more available.

Q8. Why are customer relations important to the agricultural business?

A8.
1) **A well-satisfied customer is more likely to come back for future purchases.**
2) **A reputation for being fair and honest will help attract new customers.**

Discuss follow-up service with students and ask why it is important.

F. Other activities

Demonstrate use of a cash register, scanner checker, and credit card machine. Borrow actual equipment if possible or visit local businesses. Be sure to check with the business in advance.

G. Conclusion

Sales tax must be collected on all applicable products as a percentage of the total sale. When making change, it is best to state the amount of the sale and count the change back up to the amount received from the customer. It is essential to follow store policy when accepting payment by check or credit card or when accepting a charge on an account.

H. Competency

Explain how to handle customer transactions.

I. Answers to Evaluation

1. a. 4
   b. 3
   c. 6
   d. 1
   e. 2
   f. 5
2. The answers may include the following but are not limited to them:
   Checks help make record keeping easier.
   A cancelled check provides evidence of payment.
   Checks are usually more convenient than cash.
3. a. $3.98
   b. $6.43
   c. $5.39
   The instructor may want to use local tax rates. If so, the answers should be refigured.
4. c
5. d
6. a

J. Answers to AS 8.1

The answers are based on a sales tax rate of 6.475 percent. It is suggested to recalculate the answers based on the local sales tax rate.

1. $ .70
2. $22.66
3. $10.36
4. $ 7.25
5. $ 2.23
6. $ .99
7. $ 1.81
8. $15.73
9. $ .34
10. $ 8.15
11. Tax exempt
12. Tax exempt
13. $18.13
14. $ 2.72
15. Tax exempt
16. Tax exempt
17. Tax exempt
18. $ .68
19. Tax exempt
20. $4.37

UNIT II - BUSINESS MANAGEMENT

Name ____________

Lesson 8: Agricultural Business
Customer Transactions

Date ____________

EVALUATION

Complete the following short answer questions.

1. Arrange the following steps for making change in the correct order by placing the numbers one through six in the blanks provided. The number one should indicate the first step; the number six the last.

    a. _____ Package the merchandise and give it to the customer.

    b. _____ Starting with the amount of the sale, add the change to the amount received from the customer.

    c. _____ Handle requests for change.

    d. _____ State the amount given to you by the purchaser and the amount of the sale.

    e. _____ Place the amount received from the customer on the ledge of the cash register.

    f. _____ Place the money received in its proper compartment in the register drawer and close it.

2. Explain why it is beneficial for a business to use checks when paying their bills.

3. Calculate the sales tax for the following items at 6.125 percent. Assume that all items are taxable.

    a. Ten bags of lawn fertilizer at $6.50 each _____
    b. Radio for your tractor, $105 _____
    c. Lumber for repairs, $88 _____

Circle the letter that corresponds to the best answer.

4. Which of the following are exempt from sales tax in Missouri?

    a. Most retail goods and services
    b. Most retail goods but not services
    c. Retail services but not most retail goods
    d. Very few retail goods or retail services

187

5. Which of the following steps are involved in the process of verifying a credit card?

   a. Check the credit card spending limit.
   b. Check the card against list of stolen cards.
   c. Check expiration date.
   d. All the above

6. Sue has a charge account at the local farm cooperative. Sue uses part-time, seasonal workers. Occasionally Sue will send these workers to purchase supplies at the cooperative and have the workers charge on her account. What procedure should the cooperative follow in this situation?

   a. Ask Sue to authorize who can use her account.
   b. Allow no one but Sue to charge on the account.
   c. Contact Sue before allowing someone else to charge on the account.
   d. Allow the person to charge on Sue's account without any additional information.

HO 8.1

Sample City Sales Tax Table

6.4' 5%
4% State
⅛% Conser on
1/10% Parks Soils
2¼% Local es

OPTIONAL
MISSOURI SALES/USE TAX FORMULA
MISSOURI DEPARTMENT OF REVENUE
OCTOBER 1985

6.475%
4% State
⅛% Conservation
1/10% Parks & Soils
2¼% Local Taxes

SALE		TAX	SALE		TAX	SALE		TAX	SALE		TAX
$ 0.00-	7	$0.00	11.82	11.96	0.77	23.71-	23.86	1.54	35.60-	35.75	2.31
0.08-	3	0.01	11.97-	12.12	0.78	23.87-	24.01	1.55	35.76-	35.90	2.32
0.24	8	0.02	12.13-	12.27	0.79	24.02-	24.16	1.56	35.91-	36.06	2.33
0.39-	4	0.03	12.28-	12.43	0.80	24.17-	24.32	1.57	36.07-	36.21	2.34
0.55-	9	0.04	12.44-	12.58	0.81	24.33-	24.47	1.58	36.22-	36.37	2.35
0.70-	4	0.05	12.59-	12.74	0.82	24.48-	24.63	1.59	36.38-	36.52	2.36
0.85-	0	0.06	12.75-	12.89	0.83	24.64-	24.78	1.60	36.53-	36.67	2.37
1.01	5	0.07	12.90-	13.05	0.84	24.79-	24.94	1.61	36.68-	36.83	2.38
1.16	1	0.08	13.06-	13.20	0.85	24.95-	25.09	1.62	36.84-	36.98	2.39
1.32-	6	0.09	13.21-	13.35	0.86	25.10-	25.25	1.63	36.99-	37.14	2.40
1.47-	2	0.10	13.36-	13.51	0.87	25.26-	25.40	1.64	37.15-	37.29	2.41
1.63-	7	0.11	13.52-	13.66	0.88	25.41-	25.55	1.65	37.30-	37.45	2.42
1.78-	3	0.12	13.67-	13.82	0.89	25.56-	25.71	1.66	37.46-	37.60	2.43
1.94-	8	0.13	13.83-	13.97	0.90	25.72-	25.86	1.67	37.61-	37.76	2.44
2.09-	3	0.14	13.98-	14.13	0.91	25.87-	26.02	1.68	37.77-	37.91	2.45
2.24-	9	0.15	14.14-	14.28	0.92	26.03-	26.17	1.69	37.92-	38.06	2.46
2.40-	4	0.16	14.29-	14.44	0.93	26.18-	26.33	1.70	38.07-	38.22	2.47
2.55-	0	0.17	14.45-	14.59	0.94	26.34-	26.48	1.71	38.23-	38.37	2.48
2.71-	5	0.18	14.60-	14.74	0.95	26.49-	26.64	1.72	38.38-	38.53	2.49
2.86-	1	0.19	14.75-	14.90	0.96	26.65-	26.79	1.73	38.54-	38.68	2.50
3.02-	6	0.20	14.91-	15.05	0.97	26.80-	26.94	1.74	38.69-	38.84	2.51
3.17-	2	0.21	15.06-	15.21	0.98	26.95-	27.10	1.75	38.85-	38.99	2.52
3.33-	7	0.22	15.22-	15.36	0.99	27.11-	27.25	1.76	39.00-	39.15	2.53
3.48	2	0.23	15.37-	15.52	1.00	27.26-	27.41	1.77	39.16-	39.30	2.54
3.63	8	0.24	15.53-	15.67	1.01	27.42-	27.56	1.78	39.31-	39.45	2.55
3.79-	3	0.25	15.68-	15.83	1.02	27.57-	27.72	1.79	39.46-	39.61	2.56
3.94-	9	0.26	15.84-	15.98	1.03	27.73-	27.87	1.80	39.62-	39.76	2.57
4.10-	4	0.27	15.99-	16.13	1.04	27.88-	28.03	1.81	39.77-	39.92	2.58
4.25-	0	0.28	16.14-	16.29	1.05	28.04-	28.18	1.82	39.93-	40.07	2.59
4.41-	5	0.29	16.30-	16.44	1.06	28.19-	28.33	1.83	40.08-	40.23	2.60
4.56-	1	0.30	16.45-	16.60	1.07	28.34-	28.49	1.84	40.24-	40.38	2.61
4.72	6	0.31	16.61-	16.75	1.08	28.50-	28.64	1.85	40.39-	40.54	2.62
4.87-	1	0.32	16.76-	16.91	1.09	28.65-	28.80	1.86	40.55-	40.69	2.63
5.02-	7	0.33	16.92-	17.06	1.10	28.81-	28.96	1.87	40.70-	40.84	2.64
5.18-	2	0.34	17.07-	17.21	1.11	28.96-	29.11	1.88	40.85-	41.00	2.65
5.33-	8	0.35	17.22-	17.37	1.12	29.12-	29.26	1.89	41.01-	41.15	2.66
5.49-	3	0.36	17.38-	17.52	1.13	29.27-	29.42	1.90	41.16-	41.31	2.67
5.64-	9	0.37	17.53-	17.68	1.14	29.43-	29.57	1.91	41.32-	41.46	2.68
5.80-	4	0.38	17.69-	17.83	1.15	29.58-	29.72	1.92	41.47-	41.62	2.69
5.95-	0	0.39	17.84-	17.99	1.16	29.73-	29.88	1.93	41.63-	41.77	2.70
6.11-	5	0.40	18.00-	18.14	1.17	29.89-	30.03	1.94	41.78-	41.93	2.71
6.26-	0	0.41	18.15-	18.30	1.18	30.04-	30.19	1.95	41.94-	42.08	2.72
6.41-	6	0.42	18.31-	18.45	1.19	30.20-	30.34	1.96	42.09-	42.23	2.73
6.57-	1	0.43	18.46-	18.60	1.20	30.35-	30.50	1.97	42.24-	42.39	2.74
6.72	7	0.44	18.61-	18.76	1.21	30.51-	30.65	1.98	42.40-	42.54	2.75
6.88-	2	0.45	18.77-	18.91	1.22	30.66-	30.81	1.99	42.55-	42.70	2.76
7.03-	8	0.46	18.92-	19.07	1.23	30.82-	30.96	2.00	42.71-	42.85	2.77
7.19-	3	0.47	19.08-	19.22	1.24	30.97-	31.11	2.01	42.86-	43.01	2.78
7.34-	9	0.48	19.23-	19.38	1.25	31.12-	31.27	2.02	43.02-	43.16	2.79
7.50-	4	0.49	19.39-	19.53	1.26	31.28-	31.42	2.03	43.17-	43.32	2.80
7.65	9	0.50	19.54-	19.69	1.27	31.43-	31.58	2.04	43.33-	43.47	2.81
7.80	5	0.51	19.70-	19.84	1.28	31.59-	31.73	2.05	43.48-	43.62	2.82
7.96-	0	0.52	19.85-	19.99	1.29	31.74-	31.89	2.06	43.63-	43.78	2.83
8.11-	6	0.53	20.00-	20.15	1.30	31.90-	32.04	2.07	43.79-	43.93	2.84
8.27-	1	0.54	20.16-	20.30	1.31	32.05-	32.20	2.08	43.94-	44.09	2.85
8.42-	7	0.55	20.31-	20.46	1.32	32.21-	32.35	2.09	44.10-	44.24	2.86
8.58-	2	0.56	20.47-	20.61	1.33	32.36-	32.50	2.10	44.25-	44.40	2.87
8.73-	8	0.57	20.62-	20.77	1.34	32.51-	32.66	2.11	44.41-	44.55	2.88
8.89-	3	0.58	20.78-	20.92	1.35	32.67-	32.81	2.12	44.56-	44.71	2.89
9.04	8	0.59	20.93-	21.08	1.36	32.82-	32.97	2.13	44.72-	44.86	2.90
9.19-	4	0.60	21.09-	21.23	1.37	32.98-	33.12	2.14	44.87-	45.01	2.91
9.35-	9	0.61	21.24-	21.38	1.38	33.13-	33.28	2.15	45.02-	45.17	2.92
9.50-	5	0.62	21.39-	21.54	1.39	33.29-	33.43	2.16	45.18-	45.32	2.93
9.66-	0	0.63	21.55-	21.69	1.40	33.44	33.59	2.17	45.33-	45.48	2.94
9.81-	6	0.64	21.70-	21.85	1.41	33.60-	33.74	2.18	45.49-	45.63	2.95
9.97-	1 1	0.65	21.86-	22.00	1.42	33.75-	33.89	2.19	45.64-	45.79	2.96
10.12-	1 7	0.66	22.01-	22.16	1.43	33.90-	34.05	2.20	45.80-	45.94	2.97
10.28-	1 2	0.67	22.17-	22.31	1.44	34.06-	34.20	2.21	45.95-	46.10	2.98
10.43-	7	0.68	22.32-	22.47	1.45	34.21-	34.36	2.22	46.11-	46.25	2.99
10.58-	1 3	0.69	22.48-	22.62	1.46	34.37-	34.51	2.23	46.26-	46.40	3.00
10.74	1 8	0.70	22.63-	22.77	1.47	34.52-	34.67	2.24	46.41-	46.56	3.01
10.89-	4	0.71	22.78-	22.93	1.48	34.68-	34.82	2.25	46.57-	46.71	3.02
11.05-	1 9	0.72	22.94-	23.08	1.49	34.83-	34.98	2.26	46.72-	46.87	3.03
11.20-	5	0.73	23.09-	23.24	1.50	34.99-	35.13	2.27	46.88-	47.02	3.04
11.36-	0	0.74	23.25-	23.39	1.51	35.14-	35.28	2.28	47.03-	47.18	3.05
11.51-	1 6	0.75	23.40-	23.55	1.52	35.29-	35.44	2.29	47.19-	47.33	3.06
11.67	1	0.76	23.56-	23.70	1.53	35.45-	35.59	2.30	47.34-	47.49	3.07

DOR-271 (2-86)

6.475% OPTIONAL MISSOURI SALES/USE TAX FORMULA

Sale		Tax	Sale		Tax	Sale		Tax	Sale		Tax
47.50-	47.64	3.08	60.62-	60.77	3.93	73.75-	73.89	4.78	86.88-	87.02	5.63
47.65-	47.79	3.09	60.78-	60.92	3.94	73.90-	74.05	4.79	87.03-	87.18	5.64
47.80-	47.95	3.10	60.93-	61.08	3.95	74.06-	74.20	4.80	87.19-	87.33	5.65
47.96-	48.10	3.11	61.09-	61.23	3.96	74.21-	74.36	4.81	87.34-	87.49	5.66
48.11-	48.26	3.12	61.24-	61.38	3.97	74.37-	74.51	4.82	87.50-	87.64	5.67
48.27-	48.41	3.13	61.39-	61.54	3.98	74.52-	74.67	4.83	87.65-	87.79	5.68
48.42-	48.57	3.14	61.55-	61.69	3.99	74.68-	74.82	4.84	87.80-	87.95	5.69
48.58-	48.72	3.15	61.70-	61.85	4.00	74.83-	74.98	4.85	87.96-	88.10	5.70
48.73-	48.88	3.16	61.86-	62.00	4.01	74.99-	75.13	4.86	88.11-	88.26	5.71
48.89-	49.03	3.17	62.01-	62.16	4.02	75.14-	75.28	4.87	88.27-	88.41	5.72
49.04-	49.18	3.18	62.17-	62.31	4.03	75.29-	75.44	4.88	88.42-	88.57	5.73
49.19-	49.34	3.19	62.32-	62.47	4.04	75.45-	75.59	4.89	88.58-	88.72	5.74
49.35-	49.49	3.20	62.48-	62.62	4.05	75.60-	75.75	4.90	88.73-	88.88	5.75
49.50-	49.65	3.21	63.63-	62.77	4.06	75.76-	75.90	4.91	88.89-	89.03	5.76
49.66-	49.80	3.22	62.78-	62.93	4.07	75.91-	76.06	4.92	89.04-	89.18	5.77
49.81-	49.96	3.23	62.94-	63.08	4.08	76.07-	76.21	4.93	89.19-	89.34	5.78
49.97-	50.11	3.24	63.09-	63.24	4.09	76.22-	76.37	4.94	89.35-	89.49	5.79
50.12-	50.27	3.25	63.25-	63.39	4.10	76.38-	76.52	4.95	89.50-	89.65	5.80
50.28-	50.42	3.26	63.40-	63.55	4.11	76.53-	76.67	4.96	89.66-	89.80	5.81
50.43-	50.57	3.27	63.56-	63.70	4.12	76.68-	76.83	4.97	89.81-	89.96	5.82
50.58-	50.73	3.28	63.71-	63.86	4.13	76.84-	76.98	4.98	89.97-	90.11	5.83
50.74-	50.88	3.29	63.87-	64.01	4.14	76.99-	77.14	4.99	90.12-	90.27	5.84
50.89-	51.04	3.30	64.02-	64.16	4.15	77.15-	77.29	5.00	90.28-	90.42	5.85
51.05-	51.19	3.31	64.17-	64.32	4.16	77.30-	77.45	5.01	90.43-	90.57	5.86
51.20-	51.35	3.32	64.33-	64.47	4.17	77.46-	77.60	5.02	90.58-	90.73	5.87
51.36-	51.50	3.33	64.48-	64.63	4.18	77.61-	77.76	5.03	90.74-	90.88	5.88
51.51-	51.66	3.34	64.64-	64.78	4.19	77.77-	77.91	5.04	90.89-	91.04	5.89
51.67-	51.81	3.35	64.79-	64.94	4.20	77.92-	78.06	5.05	91.05-	91.19	5.90
51.82-	51.96	3.36	64.95-	65.09	4.21	78.07-	78.22	5.06	91.20-	91.35	5.91
51.97-	52.12	3.37	65.10-	65.25	4.22	78.23-	78.37	5.07	91.36-	91.50	5.92
52.13-	52.27	3.38	65.26-	65.40	4.23	78.38-	78.53	5.08	91.51-	91.66	5.93
52.28-	52.43	3.39	65.41-	65.55	4.24	78.54-	78.68	5.09	91.67-	91.81	5.94
52.44-	52.58	3.40	65.56-	65.71	4.25	78.69-	78.84	5.10	91.82-	91.96	5.95
52.59-	52.74	3.41	65.72-	65.86	4.26	78.85-	78.99	5.11	91.97-	92.12	5.96
52.75-	52.89	3.42	65.87-	66.02	4.27	79.00-	79.15	5.12	92.13-	92.27	5.97
52.90-	53.05	3.43	66.03-	66.17	4.28	79.16-	79.30	5.13	92.28-	92.43	5.98
53.06-	53.20	3.44	66.18-	66.33	4.29	79.31-	79.45	5.14	92.44-	92.58	5.99
53.21-	53.35	3.45	66.34-	66.48	4.30	79.46-	79.61	5.15	92.59-	92.74	6.00
53.36-	53.51	3.46	66.49-	66.64	4.31	79.62-	79.76	5.16	92.75-	92.89	6.01
53.52-	53.66	3.47	66.65-	66.79	4.32	79.77-	79.92	5.17	92.90-	93.05	6.02
53.67-	53.82	3.48	66.80-	66.94	4.33	79.93-	80.07	5.18	93.06-	93.20	6.03
53.83-	53.97	3.49	66.95-	67.10	4.34	80.08-	80.23	5.19	93.21-	93.35	6.04
53.98-	54.13	3.50	67.11-	67.25	4.35	80.24-	80.38	5.20	93.36-	93.51	6.05
54.14-	54.28	3.51	67.26-	67.41	4.36	80.39-	80.54	5.21	93.52-	93.66	6.06
54.29-	54.44	3.52	67.42-	67.56	4.37	80.55-	80.69	5.22	93.67-	93.82	6.07
54.45-	54.59	3.53	67.57-	67.72	4.38	80.70-	80.84	5.23	93.83-	93.97	6.08
54.60-	54.74	3.54	67.73-	67.87	4.39	80.85-	81.00	5.24	93.98-	94.13	6.09
54.75-	54.90	3.55	67.88-	68.03	4.40	81.01-	81.15	5.25	94.14-	94.28	6.10
54.91-	55.05	3.56	68.04-	68.18	4.41	81.16-	81.31	5.26	94.29-	94.44	6.11
55.06-	55.21	3.57	68.19-	68.33	4.42	81.32-	81.46	5.27	94.45-	94.59	6.12
55.22-	55.36	3.58	68.34-	68.49	4.43	81.47-	81.62	5.28	94.60-	94.74	6.13
55.37-	56.52	3.59	68.50-	68.64	4.44	81.63-	81.77	5.29	94.75-	94.90	6.14
55.53-	55.67	3.60	68.65-	68.80	4.45	81.78-	81.93	5.30	94.91-	95.05	6.15
55.68-	55.83	3.61	68.81-	68.95	4.46	81.94-	82.08	5.31	95.06-	95.21	6.16
55.84-	55.98	3.62	68.96-	69.11	4.47	82.09-	82.23	5.32	95.22-	95.36	6.17
55.99-	56.13	3.63	69.12-	69.26	4.48	82.24-	82.39	5.33	95.37-	95.52	6.18
56.14-	56.29	3.64	69.27-	69.42	4.49	82.40-	82.54	5.34	95.53-	95.67	6.19
56.30-	56.44	3.65	69.43-	69.57	4.50	82.55-	82.70	5.35	95.68-	95.83	6.20
56.45-	56.60	3.66	69.58-	69.72	4.51	82.71-	82.85	5.36	95.84-	95.98	6.21
56.61-	56.75	3.67	69.73-	69.88	4.52	82.86-	83.01	5.37	95.99-	96.13	6.22
56.76-	56.91	3.68	69.89-	70.03	4.53	83.02-	83.16	5.38	96.14-	96.29	6.23
56.92-	57.06	3.69	70.04-	70.19	4.54	83.17-	83.32	5.39	96.30-	96.44	6.24
57.07-	57.21	3.70	70.20-	70.34	4.55	83.33-	83.47	5.40	96.45-	96.60	6.25
57.22-	57.37	3.71	70.35-	70.50	4.56	83.48-	83.62	5.41	96.61-	96.75	6.26
57.38-	57.52	3.72	70.51-	70.65	4.57	83.63-	83.78	5.42	96.76-	96.91	6.27
57.53-	57.68	3.73	70.66-	70.81	4.58	83.79-	83.93	5.43	96.92-	97.06	6.28
57.69-	57.83	3.74	70.82-	70.96	4.59	83.94-	84.09	5.44	97.07-	97.21	6.29
57.84-	57.99	3.75	70.97-	71.11	4.60	84.10-	84.24	5.45	97.22-	97.37	6.30
58.00-	58.14	3.76	71.12-	71.27	4.61	84.25-	84.40	5.46	97.38-	97.52	6.31
58.15-	58.30	3.77	71.28-	71.42	4.62	84.41-	84.55	5.47	97.53-	97.68	6.32
58.31-	58.45	3.78	71.43-	71.58	4.63	84.56-	84.71	5.48	97.69-	97.83	6.33
58.46-	58.60	3.79	71.59-	71.73	4.64	84.72-	84.86	5.49	97.84-	97.99	6.34
58.61-	58.76	3.80	71.74-	71.89	4.65	84.87-	85.01	5.50	98.00-	98.14	6.35
58.77-	58.91	3.81	71.90-	72.04	4.66	85.02-	85.17	5.51	98.15-	98.30	6.36
58.92-	59.07	3.82	72.05-	72.20	4.67	85.18-	85.32	5.52	98.31-	98.45	6.37
59.08-	59.22	3.83	72.21-	72.35	4.68	85.33-	85.48	5.53	98.46-	98.60	6.38
59.23-	59.38	3.84	72.36-	72.50	4.69	85.49-	85.63	5.54	98.61-	98.76	6.39
59.39-	59.53	3.85	72.51-	72.66	4.70	85.64-	85.79	5.55	98.77-	98.91	6.40
59.54-	59.69	3.86	72.67-	72.81	4.71	85.80-	85.94	5.56	98.92-	99.07	6.41
59.70-	59.84	3.87	72.82-	72.97	4.72	85.95-	86.10	5.57	99.08-	99.22	6.42
59.85-	59.99	3.88	72.98-	73.12	4.73	86.11-	86.25	5.58	99.23-	99.38	6.43
60.00-	60.15	3.89	73.13-	73.28	4.74	86.26-	86.40	5.59	99.39-	99.53	6.44
60.16-	60.30	3.90	73.29-	73.43	4.75	86.41-	86.56	5.60	99.54-	99.69	6.45
60.31-	60.46	3.91	73.44-	73.59	4.76	86.57-	86.71	5.61	99.70-	99.84	6.46
60.47-	60.61	3.92	73.60-	73.74	4.77	86.72-	86.87	5.62	99.85-	99.99	6.47
									100.00-	100.15	6.48

EXEMPT SALES — (Schedule A)

These items are exempt only if used exclusively for agricultural purposes, on land owned or leased for the purpose of producing farm products, and used directly in producing farm products or livestock to be sold ultimately at retail.

Artificial insemination equipment
Augers

Balers
Bale transportation equipment
Binders
Bins, grain, portable
Blowers
Brooders
Bulk milk coolers
Bulk milk tanks

Calf weaners and feeders
Cattle currying and oiling machine
Cattle feeders, portable
Chain saws for commercial use in harvesting timber, lumber, and in orchard pruning
Chicken pluckers, portable
Choppers
Combines
Conveyors, portable
Corn pickers
Crawlers, tractor
Crushers
Cultipackers
Cultivators

De-beakers for productive animals
De-horners for productive animals
Discs
Drags
Dryers
Dusters

Egg handling equipment
Ensilage cutters

Farm tractors
Farm wagons
Farrowing houses, portable, and crates
Feed carts
Feed grinders
Feeders
Fertilizer distributors
Foggers
Forage boxes
Forage harvester
Fruit graters
Fruit harvesters

Grain augers
Grain binders
Grain bins, portable
Grain conveyors
Grain drills
Grain elevators, portable
Grain handling equipment
Grain planters

Harrows (including spring-tooth harrow)
Hay loaders
Head gates
Hog feeders, portable
Hoists, farm
Husking machines
Hydro-coolers

Incubators, portable
Irrigation equipment

EXEMPT SALES — (Schedule A) (Continued)

Livestock feeding, watering and handling equipment, portable

Manure handling equipment, including front end and rear end loaders and blades
Manure spreaders
Milk cans
Milk coolers
Milk strainers
Milking equipment, including bulk milk refrigerators, coolers, and tanks
Milking machine
Mowers, hay and rotary blade

Pickers
Planters
Plows
Poultry feeder, portable
Poultry house equipment
Pruning and picking equipment

Refrigerators used to cool raw milk
Repair and replacement parts for exempt machinery
Rollers
Root vegetable harvesters
Rotary blade mowers
Rotary hoes

Seeders
Seed cleaners
Seed planters
Shellers
Silo unloaders
Sorters
Sowers
Sprayers
Spreaders
Squeeze chutes
Subsoilers

Tanks, bulk milk
Threshing machines
Tires for exempt machinery
Tillers
Tractors, farm

Vacuum coolers
Vegetable graders
Vegetable washers
Vegetable waxers

Wagons, farm
Washers: fruit, vegetable, and egg
Waxers

Source: Guidelines for Sales Tax Exemptions for Farm Machinery, Repair Parts, Feed Additives, and Fuels. Missouri Department of Revenue, Division of Taxation, 1980.

TAXABLE SALES — (Schedule B)

Air compressors
Air tanks
Anti-freeze
Automobiles
Axes

Baler twine
Barn ventilators
Binder twine
Bins, permanently installed
Brooms
Brushes
Building materials and supplies

Cattle feeders, permanently installed
Cement
Chain saws
Cleansing agents and materials
Construction tools
Conveyors, permanently installed
Cow stalls

Ear tags
Electrical wiring
Equipment for fire prevention
Equipment and supplies for home or personal use

Fans
Fence building tools
Fence posts
Field toilets
Fire prevention equipment
Fuel additives

Garden hose
Garden rakes and hoes
Gasoline tanks and pumps
Grain bins, permanently installed
Greases and oils

Hand tools
Hammers
Heaters
Hog rings
Hog ringers
Hose, garden
Hydraulic fluid

Lamps
Lanterns
Lawnmowers
Light bulbs
Lubricating oils and grease

Marking chalk

Nails

Office supplies and equipment

Packing room supplies
Personal property installed in or used in housing for farm workers
Post hole diggers
Pumps, gasoline
Pumps for household or lawn use

Refrigerators for home use
Repair tools
Road maintenance equipment
Road scraper
Roofing

TAXABLE SALES — (Schedule B) (Continued)

- Sanders
- Shovels
- Silos
- Small tools
- Snow fence
- Snow plows and snow equipment
- Stalls
- Stanchions
- Staples
- Supplies for home or personal use

- Tanks, air
- Tanks, gasoline
- Toilets, field
- Tools for repair construction
- Tractors, garden

- Water hose
- Welding equipment
- Wire, fencing
- Wrenches

Source: Guidelines for Sales Tax Exemptions for Farm Machinery, Repair Parts, Feed Additives, and Fuels. Missouri Department of Revenue, Division of Taxation, 1980.

PROBLEMS IN FIGURING SALES TAX

For figuring sales tax, use your local tax rate of ______ percent.

Assume tax is to be charged on all items. Calculate the tax for the following:

1. One 50-pound bag of dog food, $10.80 ______
2. Fifty 50-pound bags of fertilizer at $7 each ______
3. Forty rods of fence at $4 per rod ______
4. Two hundred concrete blocks at $.56 each ______
5. Electric clippers, $34.50 ______
6. Order of garden seeds, $15.30 ______
7. Two scoop shovels at $13.95 each ______
8. Power lawnmower, $243 ______
9. One 50 pound bag of wild birdseed, $5.20 ______
10. Lumber for repairs, $125.80 ______

In the following examples, determine if tax should be charged, and how much it should be.

11. One thousand feet of field tile for repair of tile lines in cornfields at $500 per 1,000 feet ______
12. Electric fence unit for a temporary electric fence at $45.95 ________
13. Five hundred concrete blocks for milk parlor wall at $.56 each ______
14. One roll of yard fence at $42 ______
15. Two rolls of picket cribbing for temporary corn crib at $21 each ______
16. Twenty bales of baler twine at $19.65 each ______
17. Five bushels of alfalfa seed at $92.30 per bushel ______
18. Ten pounds of lawn seed at $1.05 per pound ______
19. Ten tons of 5-20-20 fertilizer for corn at $149.82 per ton ______
20. Twenty-five sections of sewer tile for septic tank drain at $2.70 each ______

UNIT II - BUSINESS MANAGEMENT

Lesson 9: Preparation and Importance of Sales Tickets

Objective: The student will be able to prepare a sales ticket.

Study Questions

1. **What is a sales ticket?**
2. **What information does the sales ticket contain?**
3. **What steps should be followed when completing a sales ticket?**
4. **How is the information on a sales ticket used?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.
2. Handouts
    a) HO 9.1: Steps in Filling Out a Sales Ticket
    b) HO 9.2: Sample Sales Ticket
    c) HO 9.3: Sales Ticket Product Check List
3. Assignment Sheet
    a) AS 9.1: Problems in Figuring Sales Tickets

Teacher References

1. Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, Unit VII.
2. Miller, Larry. Selling in Agribusiness. 1st ed. New York: McGraw-Hill, 1979.
3. Lee, Delene W.; Jasper S. Lee. Agribusiness Procedures and Records. New York: McGraw-Hill Book Company, 1980.
4. Transparency Masters
    a) TM 9.1: Incorrect Sales Ticket
    b) TM 9.2: Completed Sales Ticket

Lesson 9: Preparation and Importance of Sales Tickets

TEACHING PROCEDURES

A. Review

B. Motivation

Show an example of a poorly completed sales ticket. Ask students to identify problems and discuss how these problems could affect business-customer relations. (TM 9.1)

C. Assignment

D. Supervised study

E. Discussion

Q1. **What is a sales ticket?**

A1.
1) **Written record of each transaction**
2) **Base or foundation for the bookkeeping or accounting system**
3) **Record of the customer's purchases**

Ask students to discuss what a sales ticket is.

Q2. **What information does the sales ticket contain?**

A2.
1) **Date of sale**
2) **Customer's name and address**
3) **Complete description of each article sold**
4) **Discounts, sales tax, and amount due**
5) **Method of payment**
6) **Any special instructions or directions**

Ask students what information the sales ticket provides. Discuss the importance of this information to record keeping.

Q3. **What steps should be followed when completing a sales ticket?**

A3.
1) **Fill in date, customer's name and address, and the description and unit price of each item sold.**
2) **Subtotal the amounts and subtract any discounts.**
3) **Calculate the sales tax on all taxable items and add it in.**
4) **Any delivery, mixing, or other charges are added in.**
5) **Add steps 2, 3, and 4 to find grand total.**
6) **Note method of payment, amount received, check number, and cash back on the sales ticket.**
7) **Have the buyer sign the sales ticket.**
8) **Initial sales ticket.**

9) **Give customer their copy and file store copies in appropriate place.**
10) **Write void on any ruined sales tickets and file them in the appropriate place.**

Discuss the proper steps in filling out a sales ticket. Use TM 9.2 as an example and pass out copies of HO 9.1 so students can follow along. Distribute copies of AS 9.1. Two copies of HO 9.2 need to be used when completing AS 9.1.

Discuss the common mistakes that are made when completing a sales ticket. The following is a list of some common mistakes.

1) Ticket is written illegibly.
2) Products or services are billed, when they were not sold.
3) The price and discount policies of the agribusiness were not followed.
4) There are mistakes in addition and subtraction.
5) Some of the sales tickets are not accounted for. If one is ruined, proper procedure is to mark it "VOID" and file it with the rest.
6) The customer's name and address are not correct.
7) The customer's signature is not obtained on the sales ticket or charge slip.

Q4. How is the information on a sales ticket used?

A4. 1) **For the business**
- a) **Used to compute daily cash balance**
- b) **Used to update inventory records**
- c) **Used to complete sales tax reports**
- d) **Used to maintain a record of sales**

2) **For the customer**
- a) **Used as a record of expenses for income tax purposes**
- b) **Used as records in case of disputed accounts**
- c) **Used as proof of purchase when returning items**

Ask students what helpful information the sales ticket supplies to business managers and customers.

F. Other activities

Bring in completed copies of sales tickets. Have students view them and point out any mistakes. Discuss how these mistakes might affect the business.

G. Conclusion

Sales tickets are a permanent record of business transactions and provide managers and customers information that will be needed in the future. Because of the importance of sales tickets, they must be completed according to the steps discussed; they must be easy to read, and they must be accurate.

H. Competency

Prepare a sales ticket.

I. Answers to Evaluation

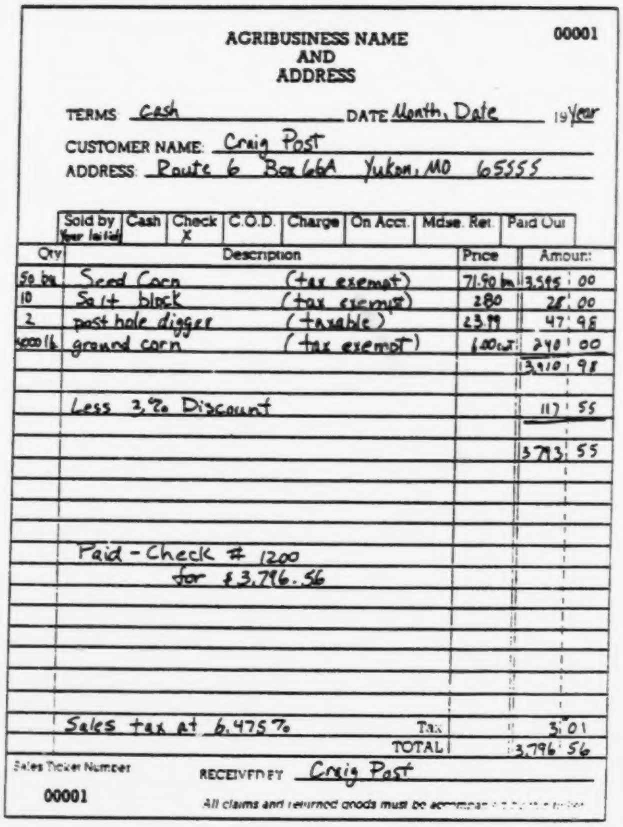
The Sales Ticket Product Check List (HO 9.3) should be used as the evaluation instrument for this lesson. Answers to the written evaluation are as follows:

1. e
2. b
3. The answer should include two of the following:

   Record used for income tax purposes.
   Records in case of disputed accounts.
   Proof of purchase when returning items.

4. Sample answer to problem using the following information:

   a. 50 bu. of seed corn at $71.90 per bushel
   b. Cash discount of 3 percent on all items
   c. 10 salt blocks at $2.80 each
   d. 2 posthole diggers at $23.99 each
   e. 4000# of corn ground at $6.00 per cwt, paid at time of delivery in cash
   f. Customer - Craig Post, Route 6 Box 66A Yukon, MO 65555
   sales tax = 6.475%



AGRIBUSINESS NAME
AND
ADDRESS

00001

TERMS Cash DATE Month, Date 19 Year
CUSTOMER NAME: Craig Post
ADDRESS: Route 6 Box 66A Yukon, MO 65555

Sold by Your Initial	Cash	Check	C.O.D.	Charge	On Acct.	Mdse. Ret.	Paid Out
		X					

Qty	Description		Price	Amount
50 bu.	Seed Corn	(tax exempt)	71.90 bu.	3,595 00
10	Salt block	(tax exempt)	2.80	28 00
2	post hole digger	(taxable)	23.99	47 98
4000 lb	ground corn	(tax exempt)	6.00 cwt	240 00
				3,910 98
	Less 3 % Discount			117 55
				3793 55
	Paid - Check # 1200 for $3,796.56			
	Sales tax at 6.475 %		Tax	3 01
			TOTAL	3,796 56

Sales Ticket Number **00001**

RECEIVED BY Craig Post

All claims and returned goods must be [illegible]

J. Answers to AS 9.1

A set of sample answers has been included. The instructor may choose to use the local sales tax rate and current local prices instead of what is provided.

PROBLEMS IN FIGURING SALES TICKETS

Use the following information to fill in two sample sales tickets. Obtain the local sales tax percentage and current prices from the instructor. Remember which items are exempt from sales tax. Complete each problem on a separate sales ticket.

Sales tax for all problems is 6.475 percent.

1. a. 18 tons 12-12-12 fertilizer at $180 per ton for corn field
   Received a 1% quantity discount on the fertilizer

   b. 50 bales of twine at $17.50 per bale
   Received $1.00 per bale discount for early order

   c. 3 shovels at $15. each

   d. Customer - Dan Smith Route 1 Box 18, Anytown, MO 65113

   e. Paid by check for exact amount

2. a. 40 bushels of seed corn at $71.90 per bushel

   b. 30 tons of soybean meal at $220. ton
   Received a 2% quantity discount

   c. 20 tubes of wormer at $11.70 per tube

   d. 1 600 gallon fuel storage tank at $315

   e. The customer paid by check and wrote the check for $15.00 more than the purchase amount

   f. Customer - Jim Stricklin, HCR5 Box 1575, Houston, MO 65444

AGRIBUSINESS NAME
AND
ADDRESS

00001

TERMS: Cash DATE Month, Day 19 XX

CUSTOMER NAME: Dan Smith

ADDRESS: Rt. 1 Box 18, Anytown, MO 65113

Sold by	Cash	Check	C.O.D.	Charge	On Acct.	Mdse. Ret.	Paid Out
Your Initials		X					

Qty	Description		Price	Amount
18 tons	12-12-12 fertilizer	(tax exempt)	$180/ton	$3,240.00
50	bales twine	(taxable)	$17.50 bale	875.00
3	shovels	(taxable)	$15.00 each	45.00
				4160.00
	Less 1% Discount on fertilizer			32.40
	Less $ 1.00/bale discount on twine			50.00
				82.40
	Subtotal			4077.60
	check # 3000			
	check for $ 4,133.93			
	Sales Tax at 6.475%	Tax		56.33
		TOTAL		$4133.93

Sales Ticket Number

00001

RECEIVED BY Dan Smith

All claims and returned goods must be accompanied by this ticket

**AGRIBUSINESS NAME
AND
ADDRESS**

00001

TERMS: Cash DATE Month, Day 19XX

CUSTOMER NAME: Jim Stricklin

ADDRESS: HCR5 Box 1575 Houston, MO 65444

Sold by	Cash	Check	C.O.D.	Charge	On Acct.	Mdse. Ret.	Paid Out
Your Initials		X					

Qty	Description	Price	Amount
40 bu	Seed Corn (tax exempt)	$71.90 bus	$2876.00
30 tons	Soybean meal (tax exempt)	$220/ton	6600.00
20 tubes	wormer (taxable)	11.70/tube	234.00
1	600 gallon fuel tank (taxable)	$315	315.00
			10,025.00
	Less 2% Discount on soybean meal		132.00
			9,893.00
	check # 2000		
	check for $ 9,943.55		
	Purchase of $ 9,928.55		
	$ 15.00		
	Sales tax at 6.475% Tax		35.55
	TOTAL		$9928.55

Sales Ticket Number

00001

RECEIVED BY: Jim Stricklin

All claims and returned goods must be accompanied by this ticket.

UNIT II - BUSINESS MANAGEMENT

Lesson 9: Preparation and Importance of Sales Tickets

Name ______________

Date ______________

EVALUATION

Circle the letter that corresponds to the best answer.

1. What information does a sales ticket provide?

   a. Date of sale
   b. Customer's name and address
   c. Complete description of each article sold
   d. Method of payment
   e. All the above

2. Sales tickets provide information on the amount of:

   a. Profit made
   b. Sales tax collected
   c. Money paid out
   d. Employees hired
   e. Hours worked

Complete the following short answer question.

3. List two things that sales tickets provide the customer.

   a.

   b.

4. Use the following information to fill in a sample sales ticket. Obtain the local sales tax percentage and current prices from the instructor. Do not charge sales tax on tax exempt items. Follow the correct steps for completing a sales ticket.

   a. 50 bu. of seed corn at _____ per bushel

   b. Cash discount of 3% on all items

   c. 10 salt blocks at _______ each

   d. 2 posthole diggers at _______ each

   e. 4,000# of ground corn at _______ per hundred weight

   f. Customer - Craig Post, Route 6 Box 66A, Yukon, MO 65555

   g. Paid by check

AGRIBUSINESS NAME
AND
ADDRESS

00001

TERMS: ______________________ DATE ________________ 19___

CUSTOMER NAME: ______________________________________

ADDRESS: ____

Sold by	Cash	Check	C.O.D.	Charge	On Acct.	Mdse. Ret.	Paid Out

Qty	Description	Price	Amount
	Tax		
	TOTAL		

Sales Ticket Number

00001

RECEIVED BY ______________________________________

All claims and returned goods must be accompanied by this ticket

STEPS IN FILLING OUT A SALES TICKET

Accurately completed sales tickets provide the business with a wealth of information. However, a poorly completed sales ticket can cause confusion and unnecessary mistakes. The following steps should be adhered to when completing sales tickets to avoid mistakes and confusion.

1. Fill in date, customer's name and address, and the description and unit price of each item sold.
2. Subtotal the amounts and subtract any discounts figure new subtotal.
3. Calculate any delivery, mixing, or other charges and enter under subtotal.
4. Calculate the sales tax on all taxable items and enter on the tax line.
5. Add steps 2, 3, and 4 to find grand total.
6. Note method of payment, amount received, check number, and any cash back on the sales ticket.
7. Have the buyer sign the sales ticket.
8. Initial the sales ticket. Give customer his or her copy and file store copies in appropriate place.
9. Fill out a sales ticket for the amount paid whenever a customer pays on an account.
10. Write "VOID" on any ruined sales tickets and file them with the other sales tickets.

Sample Sales Ticket

00001

AGRIBUSINESS NAME
AND
ADDRESS

TERMS: ______________________ DATE ________________ 19___

CUSTOMER NAME: ______________________________________

ADDRESS: ____

Sold by	Cash	Check	C.O.D.	Charge	On Acct.	Mdse. Ret.	Paid Out

Qty	Description	Price	Amount
	Tax		
	TOTAL		

Sales Ticket Number

00001

RECEIVED BY: ______________________________

All claims and returned goods must be accompanied by this ticket.

HO 9.3

Sales Ticket Product Check List

Student's Name: ______________________________ Date: ________

Product to be evaluated: ______________________________

Directions: Before attempting this task for mastery, the student should carefully review this check list. Evaluation will be made on the basis of this check list. Mastery will be evidenced by scoring at least _____ out of _____ points.

ACTIVITY	POINTS POSSIBLE	POINTS RECEIVED
1. Correct date		
2. Customer's name and address		
3. Complete description of article		
4. Subtotal of the transaction		
5. Less any discounts		
6. Subtotal		
7. Sales tax on taxable items		
8. Delivery or other charges		
9. Grand total of charges for the sale		
10. Method of payment		
11. Record of amount of check or cash offered in payment and change returned		
12. Signature of person receiving merchandise when settlement is other than cash		
13. Record of customer paying on account		
14. Ticket which is ruined marked "VOID"		
15. Ticket initialed by salesperson		
16. Written legibly		
17. Mathematically correct		
TOTAL:		

Minimum Mastery Level: ________

Incorrect Sales Ticket

AGRIBUSINESS NAME
AND
ADDRESS

00001

TERMS:
DATE June 1983

CUSTOMER NAME: Jim

ADDRESS:

Sold by	Cash	Check	C.O.D.	Charge	On Acct.	Mdse. Ret.	Paid Out

Qty	Description	Price	Amount
	Supplies	2.30	$[illegible]6 50
	" Seed	3.20	125 40
			3 40
3	Blocks		2 35
	Rope		6 [illegible]
			157 00
			298 15
			8 94
			84 29
			[illegible] 33
			50 87
		Tax	
		TOTAL	

Sales Ticket Number

00001

RECEIVED BY:

All claims and returned goods must be accompanied by this ticket.

Completed Sales Ticket

TM 9.2

AGRIBUSINESS NAME
AND
ADDRESS

00001

TERMS: 2/10 Net 30 DATE August 10 1987

CUSTOMER NAME: Paul Thacker

ADDRESS: Route #10, Box 301 Anytown, MO 65500

Sold by	Cash	Check	C.O.D.	Charge	On Acct.	Mdse. Ret.	Paid Out
MJM		✓					

Qty	Description	Price	Amount	
10	Bales of International Twine (taxable)	$ 33.50	$335	00
1	Garden hoe (taxable)	3.00	3.	00
2	50# bags of dog food (taxable)	8.80	16	60
			354	60
	less early season discount on twine	2.50/bale	-25	00
			329	60
1000#	Grinding (tax exempt)	.40/cwt	4	00
	Check #475 for $ 360.00			
	Purchase 354.12			
	Change $ 5.88			
	Sales Tax at 6.475% Tax		21	34
	TOTAL		$354	12

Sales Ticket Number

00001

RECEIVED BY: Paul Thacker

All claims and returned goods must be accompanied by this ticket.

PROBLEMS IN FIGURING SALES TICKETS

Use the following information to fill in two sample sales tickets. Obtain the local sales tax percentage and current prices from the instructor. Remember which items are exempt from sales tax. Complete each problem on a separate sales ticket.

Sales tax for all problems is _____ percent.

1. a. 18 tons 12-12-12 fertilizer at _______ per ton for corn field
   Received a 1% quantity discount on the fertilizer

   b. 50 bales of twine at _______ per bale
   Received $1.00 per bale discount for early order

   c. 3 shovels at _______ each

   d. Customer - Dan Smith Route 1 Box 18, Anytown, MO 65113

   e. Paid by check for exact amount

2. a. 40 bushels of seed corn at _______ per bushel

   b. 30 tons of soybean meal at _______ ton
   Received a 2% quantity discount

   c. 20 tubes of wormer at _______ per tube

   d. 1 600 gallon fuel storage tank at _______

   e. The customer paid by check and wrote the check for $15.00 more than the purchase amount

   f. Customer - Jim Stricklin, HCR5 Box 1575, Houston, MO 65444

UNIT II - BUSINESS MANAGEMENT

Lesson 10: Customer Credit

Objective: The student will be able to explain customer credit in an agricultural business.

Study Questions

1. **What is customer credit?**
2. **What are the advantages and disadvantages of extending credit to customers?**
3. **What factors should be included in the credit policy of an agribusiness?**
4. **What are the three factors to consider when determining credit standing?**
5. **What are some sources of credit information?**
6. **What billing and collection procedures are used?**
7. **How is delinquent credit generally handled?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.
2. Handouts
   a) HO 10.1: Credit Application
   b) HO 10.2: Credit Statement
3. Assignment Sheet
   a) AS 10.1: Rate Yourself as a Credit Risk

Teacher References

1. Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, Unit VII.
2. Miller, Larry. Selling in Agribusiness. 1st ed. New York: McGraw-Hill, 1979.
3. Lee, Delene W.; Jasper S. Lee. Agribusiness Procedures and Records. New York: McGraw-Hill Book Company, 1980.

Lesson 10: Customer Credit

TEACHING PROCEDURES

A. Review

B. Motivation

Describe a situation in which a feed store has sold several thousands of dollars of feed to several customers on account. Later these customers either refused to pay or could not pay. As a result the feed store is going to go bankrupt. What could the feed store have done differently to insure that customers would have been able to pay their accounts?

C. Assignment

D. Supervised study

E. Discussion

Q1. What is customer credit?

A1. 1) **Customer credit is a method of obtaining goods or services with a promise to pay later.**

Ask students what it means to buy something on credit. Review the definition of interest and make sure the students understand the difference between creditor and debtor.

Q2. What are the advantages and disadvantages of extending credit to customers?

A2.
- 1) **Advantages**
  - a) **Convenient for customers**
  - b) **Increased sales**
  - c) **Spreads out sales during the year**
- 2) **Disadvantages**
  - a) **Bad debts (uncollectable accounts)**
  - b) **Increases paperwork which costs more in time and labor**
  - c) **Ties up operating capital of the business**

One of the biggest problems businesses face with extending credit is uncollectable accounts. Without proper business procedures this may cause the disadvantages to outweigh the advantages. Make two headings on the board to list the advantages and disadvantages. Have students discuss each.

Q3. What factors should be included in the credit policy of an agribusiness?

A3.
1) **Terms of sale**
2) **Credit eligibility**
3) **Limitations on credit**
4) **Billing and collection procedures**
5) **Written agreements**
6) **Security**

NOTE: The Federal Consumer Credit Protection Act of 1968 (Truth in Lending Act) states that a copy of the terms and conditions of credit agreements be given to the applicant. This law applies to credit that does not exceed $25,000 and to all real estate transactions regardless of the amount.

Refer students to the motivation example and ask them to give examples of policies concerning credit that should be established by a business to avoid the situation presented. Ask students why credit policies are established and what is the main purpose behind them. Use local examples of credit policies.

Q4. What are the three factors to consider when determining credit standing?

A4.
1) **Character of the individual**
2) **Collateral offered for security**
3) **Cash flow of the customer**

Discuss the 3 C's used to determine credit standing.

Q5. What are some sources of credit information?

A5.
1) **Credit application form**
2) **The individual's employer**
3) **Credit bureau**
4) **Personal interview**
5) **Other creditors or banks that the individual has borrowed from**

Use HO 10.1 to show the information required on a common credit applicaton form. This gives the creditor a source of information that is used to determine the individual's credit standing.

Q6. What billing and collection procedures are used?

A6.
1) **Customers generally await statements before paying so it is important to have a regular schedule for sending out statements.**
2) **Generally the first statement is sent when the purchase is entered in the records, the second when it is due, and the third when it is delinquent.**

Ask students to discuss why it is important to have set procedures on billing and collection procedures. HO 10.2 is a sample credit statement. Use the numbers as a reference when discussing the form.

Q7. How is delinquent credit generally handled?

A7. 1) **Usually, after an account is 30 days overdue, telephone calls and letters are the first step.**
2) **The second step is a personal visit by a business employee, usually the credit manager.**
3) **The third step is hiring a collection agency.**
4) **The fourth and final step is to have an attorney file a lawsuit. This is only used on large accounts because of the expense.**

Collection of delinquent accounts can be troublesome and quite expensive. Discuss how late payments hurt a business, and describe the steps in collecting debts. The following table represents the declining value over time of each dollar in overdue accounts. This drop in value is due to the loss in money the business has from trying to collect the accounts and the cost of having capital tied up in the delinquent accounts. The drop is also due to the fact that some accounts are never collected.

Time in Months and Years	Value of $1.00 in Delinquent Account
3 months	.90
6 months	.50
1 year	.30
2 years	.23
3 years	.15
5 years	.01

F. Other activities

You may want students to practice writing letters requesting that overdue accounts be paid.

G. Conclusion

Customer credit is a method for obtaining goods or services with a promise to pay later. Businesses should have a set policy for handling customer credit. Delinquent accounts add up and can be expensive for the business to collect.

H. Competency

Describe the proper procedures for handling customer credit in a business.

I. Answers to Evaluation

1. Answers should include three of the following: credit application form, the individual's employer, credit bureau, personal interview, other creditors or banks that the idividual may owe.

2. See question 2.

3. Terms of sale
Credit eligibility
Limitations on credit

Billing and collection procedures
Written agreements
Security

4. See question 7.
5. Customer credit is a method for obtaining goods or services with a promise to pay later.

J. Answers to AS 10.1

Students should answer:

Yes to: 1, 2, 4, 5, 6, 7, 8
No to: 3, 9
0-2 wrong - good credit risk
2-5 wrong - medium credit risk
5 or more wrong - poor credit risk. It is time to evaluate the operation to determine what the priorities are.

UNIT II - BUSINESS MANAGEMENT

Lesson 10: Customer Credit

Name ____________________

Date ____________________

EVALUATION

Complete the following short answer questions.

1. List three sources of credit information.

   a.

   b.

   c.

2. Explain one advantage and one disadvantage of extending credit to customers.

3. What are three factors that should be included in the credit policy of an agribusiness?

   a.

   b.

   c.

4. List the steps in collecting delinquent credit.

5. Define credit.

HO 10.1

A Credit Application for a Charge Account

Signature

An Applicant, If Married, May Apply for a Separate Account.

For Office Use Only
A'85

I (we) have read and signed the credit agreement above and acknowledge having the agreement to retain for my (our) records.

Applicant's Signature
Date

Co-Applicant's Signature
Date

For Office Use Only

Store Number	FLC	Ri	CBC	JCP12	J	I	CL	Audit Code	CBSC
Account Number	Date	TB	ID	CCA	CCAB	Date	CCID		

General Information—(Please Print All Information)

Type of Account You Want (Check One)
☐ Individual
☐ Joint

Have You Applied for a **Byers** Account Before?
Applicant ☐ Yes ☐ No
Where
When
Co-Applicant ☐ Yes ☐ No
Where
When

Name of Applicant to Whom Our Billing Statements Should Be Sent
(First) (Initial) (Last)
Social Security Number
Date of Birth
No. of Dependent Children

Name of Co-Applicant (If Joint Account Requested)
(First) (Initial) (Last)
Social Security Number
Date of Birth
Relationship to Applicant

Name and Relationship(s) to Applicant(s) of Any Other Person (s) You Will Allow to Charge Purchases to Your Account
(First) (Initial) (Last) (Relationship)

Information about Co-Applicant (If Joint Account Requested)

Present Residence Address—Street
City, State
Zip
Area Code & Phone Number ( )
How Long at this Address Yrs. Mos
Monthly Mtge./Rent
Do You
☐ Own ☐ Rent ☐ Own Mobile Home ☐ Live with Parents ☐ Other (Please Specify)
Former Address—Street
How Long
City, State
Zip
Employer's Name (Give Firm's Full Name)
How Long
Employer's Address (Street/City/State)
Business Telephone
Type of Business
Present Position
Monthly Salary

Information about Applicant to Whom Our Billing Statements Should Be Sent

Present Residence Address—Street
City, State
Zip
Area Code & Phone Number ( )
How Long at this Address Yrs. Mos
Monthly Mtge./Rent
Do You
☐ Own ☐ Rent ☐ Own Mobile Home ☐ Live with Parents ☐ Other (Please Specify)
Former Address—Street
How Long
City, State
Zip
Employer's Address (Street/City/State)
How Long
Employer's Name (Give Firm's Full Name)
Business Telephone
Type of Business
Present Position
Monthly Salary

You Need Not Furnish Alimony, Child Support, or Separate Maintenance Income Information If You Do Not Want Us to Consider It in Evaluating Your Application

Other Income—Source (s)
Amount (Monthly)

Other Income—Source (s)
Amount (Monthly)

Bank Accounts (Include Co-Applicant's If Joint Account Requested)

Bank—Branch	Account in the Name of	Checking & Savings	Checking	Savings	Loan
1		☐	☐	☐	☐
2.		☐	☐	☐	☐

Credit References (Include Co-Applicant's If Joint Account Requested)

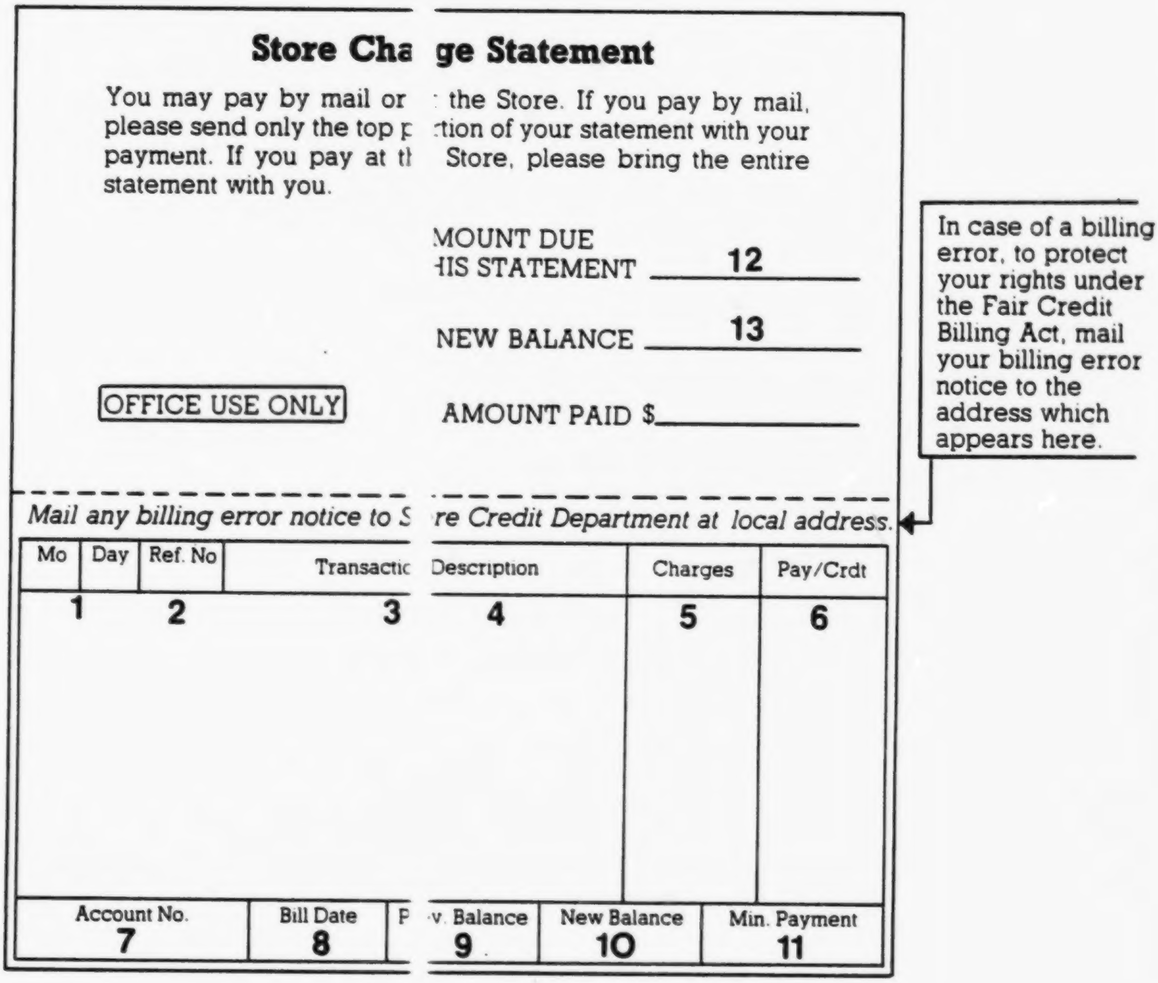
Credit Cards (Include Loan or Finance Companies) Firm Name	Location	Account/Loan Number	Account/Loan in the Name of
1			
2			
3.			

Personal Reference

Name of Person Not Living at Address of Applicant or Co-Applicant	Relationship to Applicant	Present Residence Address (Street/City/State)

HO 10.2

Credit Statement



Store Cha ge Statement

You may pay by mail or the Store. If you pay by mail, please send only the top p rtion of your statement with your payment. If you pay at th Store, please bring the entire statement with you.

MOUNT DUE
HIS STATEMENT 12

NEW BALANCE 13

OFFICE USE ONLY

AMOUNT PAID $

In case of a billing error, to protect your rights under the Fair Credit Billing Act, mail your billing error notice to the address which appears here.

Mail any billing error notice to S re Credit Department at local address.

Mo	Day	Ref. No	Transactic Description	Charges	Pay/Crdt
1		2	3 4	5	6

Account No.	Bill Date	P v. Balance	New Balance	Min. Payment
7	8	9	10	11

TRUTH IN LENDING: Here you wi find disclosures regarding the Annual Percentage Rate of Finance Charg applicable to your account.

AS 10.1

RATE YOURSELF AS A CREDIT RISK

Can you walk into your bank, farm credit system office, or some other lender's office with confidence that you will get the loan you need? Do you have a good proposition to offer, or are you afraid you will be turned down?

It all boils down to this: are you a good credit risk?

The answer to this question is quite complex. However, there are some things about you and your family that your lender would like to know. Check yourself by marking "Yes" or "No" on the accompanying list to determine how you rate on the characteristics lenders use to assess credit risk.

Check your answers with the instructors key to see if you rate as a good, medium, or poor credit risk.

		Yes	No
	Character		
1.	Do my friends and neighbors think well of me?		
2.	Do I pay off my debts sooner than required?		
3.	Do I resist suggestions from my lender?		
	Cash flow		
4.	Do I have sufficient income to pay my expenses?		
5.	Do I have money left over each month after paying my living expenses and loans?		
6.	Do I keep accurate written records of my cash flow?		
	Collateral		
7.	Are my assets valued at fair market value?		
8.	Is my net worth increasing?		
9.	Are my debts greater than my net worth?		

Lesson 11: Loans for Agricultural Businesses

Objective: The student will be able to explain factors that should be considered before securing a loan.

Study Questions

1. **Define the types of loans available to businesses.**
2. **When should money be borrowed?**
3. **What factors influence how much a business can safely borrow?**
4. **What is leverage?**
5. **What are some sources of loans?**
6. **How can interest rates be compared?**
7. **What credit instruments are used by lending agencies?**

Student Reference

1. Agricultural Management and Economics (Student Refernce). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.

Teacher References

1. Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, Unit VII.
2. Lee, Delene W.; Jasper S. Lee. Agribusiness Procedures and Records. New York: McGraw-Hill Book Company, 1980.
3. Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.
4. Schneeberger, Kenneth C.; Donald D. Osburn. Farm Management Manual. 2nd ed. Danville, IL: Interstate Printer and Publishers, 1978.
5. Richards, R. Malcolm; S. Kerry Cooper; Donald R. Fraser. Personal Finance. Glenview, IL: Scott, Foresman and Company, 1984.

Lesson 11: Loans for Agricultural Businesses

TEACHING PROCEDURES

A. Review

B. Motivation

Ask students how many of them plan to buy a car, house, land, or business sometime in the future. Ask them how they would pay for those items. Explain that individuals and businesses can secure a loan for these purchases.

C. Assignment

D. Supervised study

E. Discussion

Q1. Define the types of loans available to businesses.

A1.
1) **Short-term loans are under one year in length. Examples include loans for unexpected expenditures or loans for current operating capital.**
2) **Intermediate-term loans are for 1-7 years. Examples include loans for building improvements or machinery purchases.**
3) **Long-term loans are more than 7 years in length. Examples include real estate loans.**

The type of loans the manager will choose depends on the business's needs. Operating capital would be a short-term loan, business improvements might need an intermediate-term loan, and a large expansion might require a long-term loan. The length of the loan may greatly affect the cash flow of the business. Discuss with students the different loans available.

Q2. **When should money be borrowed?**

A2.
1) **For planned investment**
2) **To offset expenses in the cash flow**
3) **For emergency expenses**

In the long run, the business can only afford to borrow money so long as the return is greater than the cost. Occasionally, the business will need to borrow money in the short run at a loss to cover current operating expenses. Ask students to discuss when the business should borrow money.

Q3. What factors influence how much a business can safely borrow?

A3. 1) **Asset to liability ratio of 2 to 1 is desirable.**
2) **Amount of outside income**
3) **Age and health of borrower**
4) **Type of assets or business**
5) **General economic conditions**

It is difficult to know exactly how much the business can safely borrow. Many different factors that will vary between businesses are involved. Discuss these factors with students. An asset to liability ratio of 2 to 1 is interpreted as having two dollars of assets for every dollar of liability.

Q4. What is leverage?

A4. **Leverage is the process of using other people's capital in addition to one's own capital to provide financing for a business.**

To determine the percentage that an owner is leveraged, divide the amount borrowed by the total investment. If an owner has $1,000 to invest and borrows $3,000, the owner would be 75% leveraged or $3,000/$4,000 = 75%.

Q5. What are some sources of loans?

A5. 1) **Commercial banks**
2) **Farm Credit Services**
3) **Life insurance companies**
4) **Farmers Home Administration**
5) **Small Business Administration**
6) **Dealers**
7) **Individuals**

Ask students to identify different sources of credit in agriculture. Additional sources such as the commodity credit corporation might be included in areas where its use is more common. Discuss each source of credit with students.

Q6. How can interest rates be compared?

A6. **Annual Percentage Rate**

The best way to shop for loans is to compare the annual percentage rate under the same conditions. Be aware of any hidden service fees or charges. Ask students to discuss simple interest and annual percentage rate.

Q7. What credit instruments are used by lending agencies?

A7. 1) **Draft - check from a lender paid directly to a business from which the borrower is purchasing**
2) **Note - written promise to pay**
3) **Mortgage - written claim the creditor holds on property used as collateral**

4) **Lien - legal claim to property filed by the creditor with the county Recorder of Deeds**
5) **Warehouse receipt - receipt for merchandise stored in warehouse (Grain is owned by the farmer, but warehouse has possession.)**
6) **Bill of lading - receipt for items in transit**
7) **Sales contract - written agreement specifying terms and payment for sale of an item**

Discuss credit instruments. If possible, have examples of these for students to examine. It is important that students know these various instruments are available if they need them.

F. Other activities

Invite a local credit representative from a bank, or the Farm Credit Services to meet with the class to discuss what creditors look for in a customer. Have students prepare a list of questions that they would ask if they were seeking a loan to finance an SOE Project.

G. Conclusion

In today's business world almost every business is faced with the problem of obtaining adequate capital to buy needed supplies and equipment. One means of obtaining the needed capital is to secure a loan. In order to borrow the money from an established lending agency you must be able to provide accurate financial records to show a reasonable means of repayment. To accomplish that goal the manager must be able to determine a safe borrowing procedure for the business. The manager must then evaluate the different sources of credit and the ways of calculating interest to determine which method of financing meets the needs of the business.

H. Competency

Explain factors that should be considered before securing a loan.

I. Answers to Evaluation

1. a
2. a
3. d
4. d
5. a

UNIT II - BUSINESS MANAGEMENT Name ______________

Lesson 11: Loans for Agricultural Businesses Date ______________

EVALUATION

Circle the letter that corresponds to the best answer.

1. It is profitable for a business to borrow money to expand when the borrowed money __________.

   a. Returns more than the cost of borrowing money
   b. Can be secured at a low interest rate
   c. Can improve the level of production
   d. Will increase volume of business

2. A bill of lading is a __________.

   a. Receipt for goods in transit
   b. Contract specifying terms and payments
   c. Written promise to pay
   d. Receipt for stored grain

3. Leverage __________.

   a. Is the use of borrowed funds with one's own to increase buying power
   b. Raises rate of return if profitable
   c. Results in larger loss if not profitable
   d. All of the above

4. Which of the following is a source for a loan?

   a. Farm Credit Services
   b. Life insurance company
   c. Individuals
   d. All of the above

5. When borrowing money it is important to compare the ______________ to determine the true interest rate.

   a. Annual percentage rate
   b. Simple interest rate
   c. Discounted interest rate
   d. Compounded interest rate

UNIT II - BUSINESS MANAGEMENT

Lesson 12: Conducting a Financial Analysis

Objective: The student will be able to complete a financial analysis of an agricultural business.

Study Questions

1. **What is a financial analysis?**
2. **Why should a financial analysis be conducted?**
3. **What questions should be considered during a financial anlaysis?**
4. **Explain the different financial analyses used in an agricultural business?**
5. **What is the importance of a cash flow statement?**
6. **What are the types of tests in a financial analysis and how do they differ?**
7. **What measures are used in a test of liquidity and how do these measures differ?**
8. **What measures are used in a test of solvency and how do these measures differ?**
9. **What measures are used in a test of profitability and how do these measures differ?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.
2. Assignment Sheet
    a) AS 12.1: The Agricultural Business Corporation

Teacher References

1. Steward, Jim; Raleigh Jobes. Farm and Ranch Business Management. Moline, IL: Deere and Company, 1985.
2. Farm Business Management Analysis. University of Missouri-Columbia, Instructional Materials Laboratory, 1984. Unit II.
3. Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co. Inc., 1983.

UNIT II - BUSINESS MANAGEMENT

Lesson 12: Conducting a Financial Analysis

TEACHING PROCEDURES

A. Review

B. Motivation

Bring a broken chair or something else that is broken, and discuss the amount of time needed to repair the object. This will give you an opportunity to start the discussion by indicating that it takes time to evaluate and repair a chair as it does to evaluate and reorganize a farm business. A "quick fix" in both cases may give bad results. Knowing what to look for and asking the correct questions are essential to getting the correct answers.

C. Assignment

D. Supervised study

E. Discussion

Q1. **What is a financial analysis?**

A1. **It is a series of steps used to determine the financial condition of a business.**

Discuss the need for people to see a doctor for a routine physical. A physical measures the health of the person. A financial analysis is used to determine the condition of the organization.

Q2. **Why should a financial analysis be conducted?**

A2.
1) **To determine credit needs**
2) **To obtain a loan**
3) **To improve profitability**
4) **To help manage taxes**

A good financial analysis will provide information that can be used in a variety of ways. Discuss ways this information can be used.

Q3. **What questions should be considered during a financial analysis?**

A3.
1) **Is the business the proper size?**
2) **Which enterprises were profitable, and which ones were not?**
3) **Why did the unprofitable enterprises fail?**
4) **What would be the effect of expanding successful enterprises and reducing unprofitable enterprises?**
5) **Is the debt load or repayment schedule too restrictive?**

It is helpful for the manager to have certain questions in mind before conducting a financial analysis. This will help point out problems more readily. Discuss with students some possible concerns the manager might have.

Q4. **Explain the different financial analyses used in agricultural businesses.**

A4.
1) **Trend analysis**
    a) **Used to measure trends within the business**
    b) **Used to compare financial condition at set points in time**
2) **Projected analysis - estimating future changes in net worth**
    a) **Based on projected net worth and cash flow statements**
    b) **Used as a forward planning tool**
3) **Comparative analysis**
    a) **Used to measure financial condition of one business against others in the industry**
    b) **Used to provide a benchmark for measuring progress**

Ask the students to discuss how they could compare their SOE Project against how it did last year, how they expect it to do next year, and how it compares with similar projects. Then discuss how these ratios can be used to accomplish this in an effective and efficient manner.

Q5. **What is the importance of a cash flow statement?**

A5.
1) **Record of when income is received and when expenses are paid**
2) **Used as a forward planning tool**
    a) **Shows when borrowed funds are needed and extra cash is available**
    b) **Indicate feasibility to aid decisions**

A cash flow is a money map. It shows where and when it enters the business and where and when it leaves the business. Discuss how this map can be used to help a business run smoothly.

Q6. **What are the types of tests in a financial analysis, and how do they differ?**

A6.
1) **Test of liquidity**
    a) **Used to determine the firm's ability to meet current financial obligations**
    b) **Useful in estimating the adequacy of the cash flow statement**
2) **Test of solvency**
    a) **Test of firm's ability to meet long-term debt obligations**
    b) **Used to determine firm's ability to withstand a crisis situation**
3) **Test of profitability**
    a) **Measure profitability of investment**
    b) **Measure profitability of sales**

Ask students to identify and distinguish the three types of financial tests. List these tests in separate columns on the board. Include a short descriptive definition with each. Leave these answers on the board so they can be used with the remaining questions.

Q7. What measures are used in a test of liquidity, and how do these measures differ?

A7. 1) Current ratio
- a) Current ratio = $\frac{\text{current assets}}{\text{current liabilities}}$
- b) Referred to as working capital ratio
- c) Should be compared with other firms in industry

2) Acid test ratio
- a) Acid test ratio = $\frac{\text{current monetary assets}}{\text{current liabilities}}$
- b) Does not include inventory
- c) Inventory viewed as a buffer against any unexpected losses

3) Inventory to receivables ratio
- a) Inventory to receivables ratio = $\frac{\text{value of inventory}}{\text{total receivables}}$
- b) Does not include cash
- c) Indicates firm's ability to profitably convert inventory into cash

Discuss the three measures used to determine liquidity. Ask students to discuss the difference in these measures and why each one is important.

Q8. What measures are used in a test of solvency and how do these measures differ?

A8. 1) Net worth to fixed assets ratio
- a) Net worth to fixed assets ratio = $\frac{\text{net worth}}{\text{fixed assets}}$
- b) Measures percent net worth in fixed assets
- c) If greater than 1:1, the amount over 1:1 represents portion of owner's net worth in working capital.

2) Net worth to total debt ratio
- a) Net worth to total debt ratio = $\frac{\text{net worth}}{\text{total debt}}$
- b) Measure of net worth as percent of total debt
- c) Generally, the higher this percentage, the better

Discuss these measures used to determine solvency. Ask students to discuss the difference in these measures and why each one is important.

Q9. What measures are used in a test of profitability, and how do these measures differ?

A9. 1) Earnings to investment ratio
- a) Earnings to investment ratio = $\frac{\text{net income}}{\text{net worth}}$
- b) Provides a measure of return on net worth
- c) Important measure for investors

2) Earnings to sales ratio
- a) Earnings to sales ratio = $\frac{\text{net income}}{\text{sales}}$
- b) Measures profit margin on sales

3) **Earnings to assets ratio**
   a) **Earnings to assets =** $\frac{\textbf{net income}}{\textbf{assets}}$
   b) **Measures return on investment**

Discuss measures used to determine the profitability of the firm. Ask students to discuss the difference in these measures and why each one is important. Have students use the ratios presented in questions 7, 8, and 9 to complete Assignment Sheet 12.1. Discuss the results of this assignment.

F. Other activities

Ask an agricultural business manager to discuss how a financial analysis is used in business.

G. Conclusion

A complete financial analysis is essential for a business to achieve maximum profit. The types of analyses we have discussed are commonly used by successful business people. A complete analysis is also helpful in completing income tax forms and receiving tax credits.

H. Competency

Complete a financial analysis of a business.

I. Answers to Evaluation

1. b
2. a
3. b
4. d
5. a

J. Answers to AS 12.1

1. a. Current ratio = 12,150/3,800 = 3.20
   b. Inventory to receivables = 7,500/2,150 = 3.49
2. a. Net worth to total debt = 21,400/9,850 = 2.17
   b. Net worth to fixed assets = 21,400/18,900 = 1.13
3. a. Earnings to investment = 3,900/21,400 = 18.2%
   b. Earnings to assets = 3,900/31,250 = 12.5%

UNIT II - BUSINESS MANAGEMENT

Name ____________________

Lesson 12: Conducting a Financial Analysis

Date ____________________

EVALUATION

Circle the letter that corresponds to the best answer.

1. A series of steps to determine the financial condition of a business is called ____________.

   a. Current ratio
   b. Financial anlaysis
   c. Physical analysis
   d. Cash analysis

2. Which of the following is a measure of liquidity?

   a. Current ratio
   b. Net worth to total debt ratio
   c. Earnings to assets ratio
   d. Earning to investments ratio

3. Which type of test is used to determine the ability of the business to meet its long term debt obligation?

   a. Test of liquidity
   b. Test of solvency
   c. Test of profitability
   d. Test of productivity

4. A cash flow statement can be used to ____________.

   a. Provide a record of when income is received and expenses are paid
   b. Plan future expenditures
   c. Indicate when borrowed funds are needed
   d. All the above

5. A trend analysis is used to ____________.

   a. Compare financial conditions at set points in time
   b. Project net worth and cash flow statements
   c. Compare financial condition of one business against others in industry
   d. None of the above

Name ______________

Date ______________

The Agricultural Business Corporation

Annual Balance Sheet as of 31 December, 1987

Assets			Liabilities	
Current:			**Current:**	
Cash		$ 2,500	Accounts payable	$ 3,500
Accounts receivable	$ 1,900		Accrued salaries payable	200
Less bad debts	-350		Accrued interest payable	100
		1,550	Total current	$ 3,800
Notes receivable		600	**Other**	
Inventory 12/31		7,500	Mortgage payable	$ 6,050
Total current		$12,150		
			Total Liabilities	$ 9,850
Fixed				
Land		2,000	**Net Worth:**	
Buildings	$15,000		**Capital Stock**	$17,500
Less depr.	-1,400		**Retained Earnings**	3,900
		13,600	**Total Net Worth**	$21,400
Machinery	$ 4,400		**Total Liabilities and**	
Less depr.	-1,100		**Net Worth**	$31,250
		3,300		
Total fixed		$18,900		
Other				
Unexpired insurance		150		
Unused supplies		50		
		$ 200		
Total Assets		$31,250		

Retained Earnings Scheduled

Balance, January 1, 1987	$ 4,700
Add profits	1,100
Total	5,800
Deduct dividends	-1,900
Balance, December 1, 1987 (Net Income)	$ 3,900

Calculate the following ratios using the sample balance sheet above.

1. Tests of liquidity
   a. current ratio
   b. inventory to receivables

2. Tests of solvency
   a. net worth to total debt ratios
   b. net worth to fixed asset ratio

3. Test of profitability
   a. earnings to investment
   b. earnings on assets ratio

230

UNIT II - BUSINESS MANAGEMENT

Lesson 13: Effects of Income Tax on the Agricultural Business

Objective: The student will be able to explain business practices to maximize after-tax income.

Study Questions

1. **What should be the goal of tax management?**
2. **What methods are used to maximize after-tax income?**
3. **How should income be categorized for tax purposes?**
4. **How should expenses be categorized for tax purposes?**
5. **How can taxable income be reduced?**
6. **How can taxable income be increased?**

Student Reference

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructonal Materials Laboratory, 1987. Unit II.

Teacher References

1. Department of Treasury Internal Revenue Service publications
   a) Farmer's Tax Guide, Publication #225
   b) Tax Guide for Small Business, Publication #334
   c) Package X, Informational Copies of Federal Tax Forms

   NOTE: Instructor should obtain new, up-to-date copies of these publications from the Internal Revenue Service each year.

3. Plain, Ron. "1986 Tax Reform Act--Impact on Agriculture." Farm Management Newsletter. Columbia, MO: Missouri Cooperative Extension Service, Dec. 29, 1986.
4. Transparency Masters
   a) TM 13.1: Taxes
   b) TM 13.2: Methods to Delay Income
   c) TM 13.3: Methods to Increase Income

Lesson 13: Effects of Income Tax on the Agricultural Business

TEACHING PROCEDURES

A. Review

B. Motivation

Businesses and individuals often pay more taxes than necessary. Time spent studying taxes and the management of taxes may pay more per hour during off-season than any other activity that the manager could perform. Identifying legal ways to reduce taxes is one method of increasing usable income by saving a higher percent of the income generated from the agricultural business. Once income has been generated, it makes good sense to save as much as possible for business or personal use. (TM 13.1)

C. Assignment

D. Supervised study

E. Discussion

Q1. **What should be the goal of tax management?**

A1. **The primary goal of tax management is to maximize after-tax income.**

Discuss why the goal of tax management is not necessarily to pay the lowest amount possible in taxes. Tax strategies based on paying the lowest possible amount in taxes may place heavy financial strains on the business in future years.

Q2. **What methods are used to maximize after-tax income?**

A2.
1) **Maintain complete and accurate records of all possible deductions that can be used to lower taxable income.**
2) **Maintain a constant level of income.**
3) **Postpone income to the next year.**

On the chalkboard or overhead, list methods used to manage taxes as students identify them. Point out that these are the basis of study in tax management.

Q3. **How should income be categorized for tax purposes?**

A3.
1) **Ordinary - wages, salaries, tips, etc.**
2) **Capital gains - from sale of capital assets**
3) **Non-taxable - interest from municipal bonds, a portion of social security benefits, gifts**

It is advisable to obtain a recent copy of the Farmers Tax Guide. List the three categories of income on the board and ask students to give examples of each type.

Q4. **How should expenses be categorized for tax purposes?**

A4.
1) **Deductible**
    a) **When purchased - feed is one example.**
    b) **When sold - feeder cattle is one example.**
2) **Nondeductible**
3) **Capital**
    a) **Depreciable**
    b) **Capitalized**

List three categories of expenses on the board and have students name expenses that would fall into each category. Discuss the difference between the categories.

Q5. **How can taxable income be reduced?**

A5.
1) **Postpone sales.**
2) **Use deferred sales contract.**
3) **Make advance payments of feed, fertilizer, fuel, etc.**
4) **Purchase needed machinery and equipment before end of year to utilize depreciation.**
5) **Use expensing.**
6) **Use accelerated depreciation.**
7) **Contribute to an Individual Retirement Account (IRA).**

Have students discuss methods of delaying income to be sure they understand how the methods work. An example of deferred sales contract would be to deliver cattle in December, but not receive payment until January. There should be a contract stipulating specifics such as when delivery is to be made, when payment is to be made, and what the price will be. There needs to be an advantage other than taxes. Often, a packer would agree to a premium price to get the cattle in December, especially if many farmers are holding until after January 1. Use TM 13.2.

Q6. **How can taxable income be increased?**

A6.
1) **Make more sales in current year.**
2) **Postpone expenses and investments until after January 1.**
3) **Pay bills after January 1.**
4) **Forego expensing.**
5) **Use straight-line depreciation.**
6) **Secure supplemental income.**
7) **Take money out of an IRA.**

Discuss methods of increasing taxable income with students. Use TM 13.3.

F. Other activities

Distribute copies of Income Tax Form 1040 to students. Discuss how different tax management strategies would affect entries on Form 1040.

G. Conclusion

Effective management throughout the year will increase after-tax income. Complete and accurate records and proper tax management strageties will aid in this process. Occasionally income will need to be increased or decreased in an attempt to have an even level of income. This will result in the lowest taxes in the long run. It is also important to be able to categorize income and expenses because the different categories can have a significant impact on taxes.

H. Competency

Explain business practices that will maximize after-tax income.

I. Answers to Evaluation

1. b
2. a
3. c
4. Depreciable items - The purchase price can be recovered over a period of years.
   Capitalized items - These can only be recovered through the sale of the item .
5. Choice "b" would result in lower taxes because it represents an even level of income.
6. Ordinary income
   Capital income
   Non-taxable income

UNIT II - BUSINESS MANAGEMENT

Name ________________

Lesson 13: Effects of Income Tax on the Agricultural Business

Date ________________

EVALUATION

Circle the letter that corresponds to the best answer.

1. The goal of good tax management is to __________.

   a. Maximize net income
   b. Maximize after-tax income
   c. Maximize before-tax income
   d. Maximize gross income

2. Which of the following is a way to reduce taxable income?

   a. Use expensing.
   b. Take money out of an Individual Retirement Account (IRA).
   c. Pay bills after January 1.
   d. Use straight-line depreciation.

3. Which of the following can be used to increase taxable income?

   a. Postpone sales.
   b. Contribute to an Individual Retirement Account (IRA).
   c. Postpone expenses and investments until after January 1.
   d. Use a deferred sales contract.

Complete the following short answer questions.

4. Explain the difference between a depreciable and a capitalized expense.

5. Which of the following would you expect to result in lower taxes? Why?

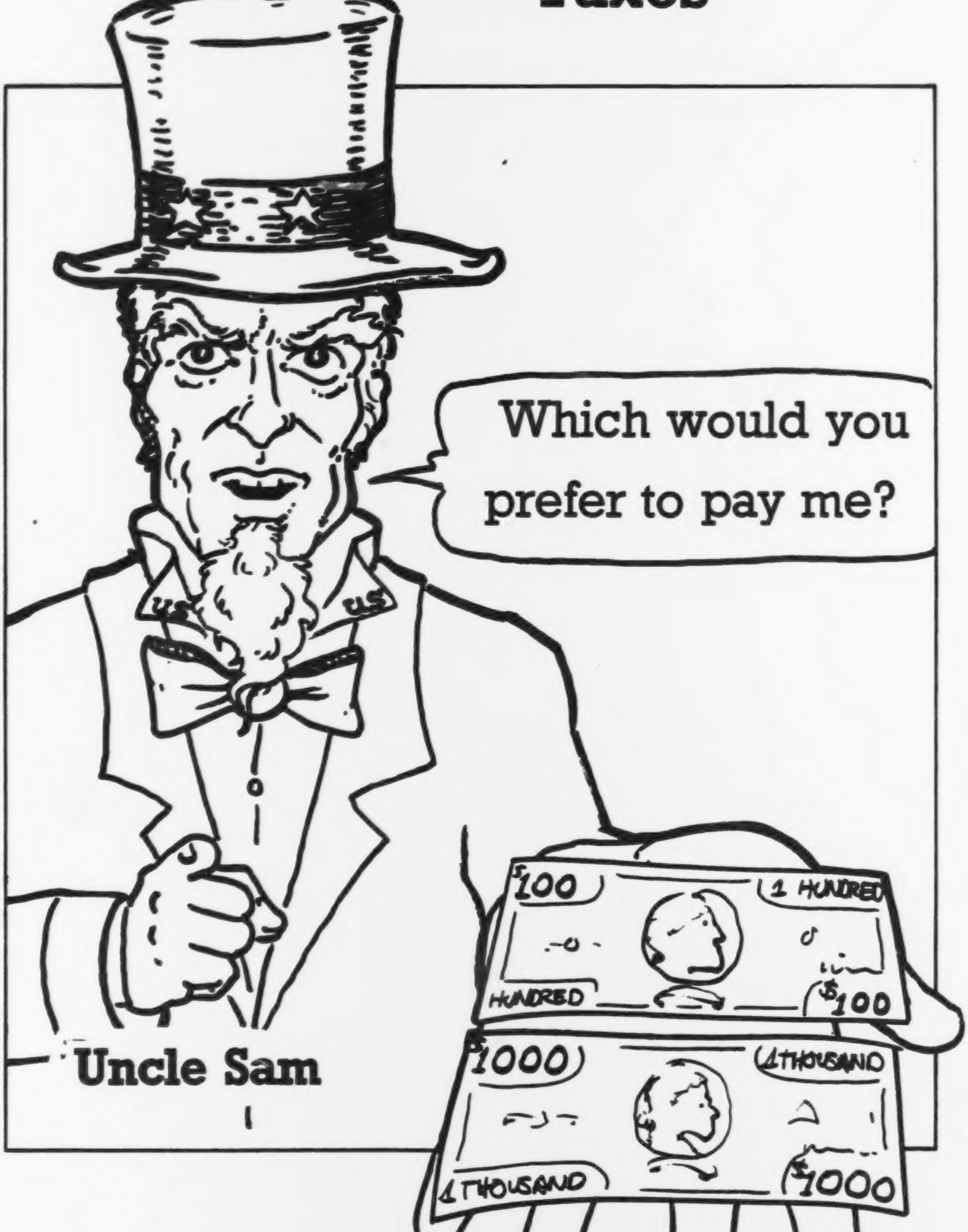
a. Year one taxable income	$30,000	b. Year one taxable income	$20,000
Year two taxable income	0	Year two taxable income	$20,000
Year three taxable income	$30,000	Year three taxable income	$20,000

6. List three types of income.

   a.
   b.
   c.

TM 13.1

Taxes


Which would you prefer to pay me?
Uncle Sam
US
US
$100
1 HUNDRED
HUNDRED
$100
$1000
1 THOUSAND
1 THOUSAND
$1000

Methods To Delay Income

A. Postpone some Sales until next Year.

B. Use Deferred Sales Contracts.

C. Make Advance Purchases of Feed and Fertilizer (Must be Firm and have an Advantage).

D. Use Expensing.

E. Purchase Needed Machinery, Equipment, Etc., before End of the Year to get Investment Credit and some Depreciation.

F. Use Accelerated Depreciation.

G. Contribute to an Individual Retirement Account.

Methods to Increase Income

- **A.** Sell Marketable Grain, Livestock, Etc., before December 31.
- **B.** Postpone Expenditures and Investments until January 1.
- **C.** Work with Suppliers to pay Bills after January 1.
- **D.** Forego Expensing.
- **E.** Use Straight Line Depreciation.
- **F.** Secure Supplemental Income.
- **G.** Withdraw Money from an Individual Retirement Account.

UNIT II - BUSINESS MANAGEMENT

Lesson 14: Calculating Depreciation for Tax Purposes

Objective: The student will be able to calculate the depreciation of an agricultural business investment.

Study Questions

1. **What is the difference between the two types of depreciation?**
2. **What is basis?**
3. **What is expensing, and what are the limitations of its use?**
4. **What are the differences between ACRS and MACRS?**
5. **How is ACRS calculated and what are the ACRS property classifications?**
6. **What are the MACRS property classifications?**
7. **What are the MACRS conventions and when does each apply?**
8. **What are the three choices of MACRS Depreciation?**
9. **What is regular MACRS and how is it calculated?**
10. **What is optional straight-line and how is it calculated?**
11. **What is alternative MACRS and how is it calculated?**
12. **What are some suggestions on using depreciation for maximum advantage?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.
2. Handout
    a) HO 14.1: Recovery Periods for Selected Assets under ACRS, Regular MACRS, and Alternative MACRS
3. Assignment Sheets
    a) AS 14.1: Basis and Expensing
    b) AS 14.2: MACRS Conventions
    c) AS 14.3: Regular MACRS Methods and Property Classification
    d) AS 14.4: Calculating Depreciation

Teacher Reference

1. Department of Treasury Internal Revenue Service publications

   a) Farmer's Tax Guide, Publication #225
   b) Tax Guide for Small Business, Publication #334
   c) Package X, Informational Copies of Federal Tax Forms

   NOTE: The instructor should obtain up-to-date copies of three publications from the Internal Revenue Service.

Lesson 14: Calculating Depreciation for Tax Purposes

TEACHING PROCEDURES

A. Review

B. Motivation

Ask students if they have had to pay taxes because of their Supervised Occupational Experience Program (SOEP). Were accurate records kept on expenses including replacement of buildings and equipment? This expense is sometimes overlooked when figuring taxes.

C. Assignment

D. Supervised study

E. Discussion

Q1. **What is the difference between the two types of depreciation?**

A1. 1) **Economic depreciation is an allowance for actual wear and tear or obsolescence of tangible property.**
2) **Tax depreciation is a system for deducting the cost and recapturing the expense of capital items based on book values.**
   - a) **Does not necessarily follow economic depreciation**
   - b) **Based on methods allowed by the government**

Tax depreciation was designed to allow the business to recover the cost of purchasing capital items more quickly. It was designed to boost the economy by increasing the incentive to purchase new items. Economic depreciaton is based on usage and obsolescence. It more accurately reflects the actual market value of an asset. Ask students to discuss the two types of depreciation.

Q2. **What is basis?**

A2. **Basis is the value of an item that can be depreciated.**
1) **Book value of trade-in property plus cash difference paid**
2) **Cost of new or used property just purchased**

Ask students what basis is. Work through the following example on the board. Have students complete the first two problems on AS 14.1.

EXAMPLE: Dave purchased a pickup on July 15. He traded in a pickup with a $1,000 undepreciated value (book value) and paid $9,000 cash difference.

$1,000 + $9,000 = $10,000 basis

Q3. **What is expensing, and what are the limitations of its use?**

A3. 1) **Option that allows a business to deduct up to $10,000 per year from the basis of capital items to be used in the business**
2) **Cannot depreciate the amount expensed**
3) **Can only expense cash difference paid**
4) **Can expense any part or all of an item or a combination up to the full amount**
5) **Cannot be used to create a loss**

Ask students what expensing is. Work examples on the board, then have students complete the problems on AS 14.1

Q4. **What are the differences between ACRS and MACRS?**

A4. 1) **Time period is different.**
   a) **ACRS (Accelerated Cost Recovery System) - the depreciation system that applies to items after 1980 and before 1987**
   b) **MACRS (Modified Accelerated Cost Recovery System) - the depreciation system that applies to items in 1987 and after**
2) **Property classes changed on some items.**
3) **The method used to calculate depreciation changed.**

This lesson focuses on changes created by the Tax Reform Act of 1986. The following question provides some basic information about ACRS. If time is available, a more detailed discussion of ACRS may be helpful in understanding how tax laws change over time.

Q5. **How is ACRS depreciation calculated and what are the ACRS property classifications?**

A5. 1) **ACRS depreciation - multiply the original basis of the item by the appropriate percentage from the ACRS table.**
2) **Property classifications**
   a) **3-year property - cars, light trucks, and swine**
   b) **5-year property - machinery, equipment, sheep, single-purpose livestock buildings, grain bins, fences, and cattle**
   c) **10-year property - orchards and mobile homes**
   d) **15-year property - rental properties, commercial buildings, land improvements, and farm buildings**
   e) **18-year property - same items as 15-year property but purchased between March 15, 1984 and May 8, 1985**
   f) **19-year property - same items as 15-year property but purchased after May 8, 1985**

Remind students that ACRS only applies to items purchased after 1980 and before 1987.

Q6. **What are the MACRS property classifications?**

A6. 1) **3-year property - breeding hogs and over-the road tractors**
2) **5-year property - cars, trucks, breeding cattle, breeding sheep, and computers**

3) 7-year property - most machinery and equipment plus single purpose agricultural buildings
4) 10-year property - ships, tugboats, and barges
5) 15-year property - orchards and vineyards
6) 20-year property - multipurpose farm buildings
7) 27½-year property - residential rental property
8) 31½-year property - commercial business property

Ask students to discuss the classifications of property under MACRS. Give examples of specific items and have students determine the property classes.

NOTE: The property classes reflect the Tax Reform Act of 1986. These laws change periodically. Information can be updated with current information from Package X.

Q7. What are the MACRS conventions and when does each apply?

A7. 1) Midmonth convention
  a) Applies to 27½- and 31½-year property
  b) Treats property as purchased or sold at the midpoint of the month
2) Midquarter convention
  a) Applies when 40 percent of the basis is purchased in the last quarter of the year
  b) Applies to three through 20-year property
3) Midyear convention
  a) Applies to the purchase of three through 20-year property if the midquarter convention does not apply
  b) Applies to the sale of three through 20-year property

Discuss when each of the different conventions applies. Remind students that one of the conventions must apply. Have students complete AS 14.2.

Q8. What are the three choices for MACRS Depreciation?

A8. 1) Regular MACRS
2) Optional Straight-line
3) Alternative MACRS

Each choice will be discussed in greater detail in following questions.

Q9. What is regular MACRS and how is it calculated?

A9. 1) 200 percent declining-balance method
  a) This method applies to 3-, 5-, 7-, and 10-year property.
  b) Apply appropriate convention the first year.
  c) Apply switch-over provision when appropriate.
  d) The basic formula is:

$$\frac{\text{200 percent}}{\text{property class}} \times \text{undepreciated value} = \text{annual depreciation}$$

2) 150 percent declining-balance method
    a) This method applies to 15- and 20-year property.
    b) Apply appropriate convention the first year.
    c) Apply switch-over provision when appropriate.
    d) The basic formula is:

$$\frac{\text{150 percent}}{\text{property class}} \times \text{undepreciated value} = \text{annual depreciation}$$

3) Straight-line method
    a) Straight-line applies to 27½- and 31½-year property.
    b) The midmonth convention applies the first year.
    c) The basic formula is:

$$\frac{\text{basis}}{\text{property class}} = \text{annual depreciation}$$

Work through an example with the students using regular MACRS. One example is provided in the student reference. Have students complete AS 14.3.

Q10. What is optional straight-line and how is it calculated?

A10. 1) It is an option to use straight-line depreciation instead of 200 percent or 150 percent declining-balance methods.
2) The appropriate convention is applied the first year.
3) The basic formula is:

$$\frac{\text{basis}}{\text{property class}} = \text{annual depreciation}$$

Once an item is depreciated using straight-line depreciation, that item must always be depreciated using straight-line depreciation. Work through examples with students.

Q11. What is alternative MACRS and how is it calculated?

A11. 1) It is an alternative for depreciating all property classes.
2) Alternative MACRS may have a longer recovery period than regular MACRS.
3) The appropriate convention is applied the first year.
4) The basic formula is:

$$\frac{\text{basis}}{\text{alternative years}} = \text{annual depreciation}$$

Handout 14.1 gives the property depreciation periods for ACRS, MACRS, and Alternative MACRS for various assets.

EXAMPLE: Jack purchased dairy cattle in November for $10,000. This was the only purchase for the year. Jack decides to depreciate the cattle using the alternative MACRS method. The cattle were purchased during the last quarter of the year; therefore, the midquarter convention applies.

1. Determine the depreciation period for dairy cattle under alternative MACRS. It is seven years.

244

2. Calculate depreciation for the first year using the midquarter convention.
Basis - Alternative class years x 1/8 = first year depreciation ($10,000 / 7) x 1/8 = $178.57

3. Calculate depreciation for years two through seven.
Basis - Alternative class years = depreciation for intervening years
$10,000 / 7 = $1,428.57 each year

4. The remaining amount is deducted in year eight.

year 1 $ 178.57
year 2 1,428.57
year 3 1,428.57
year 4 1,428.57
year 5 1,428.57
year 6 1,428.57
year 7 1,428.57
$10,000 - $8,749.99 = $1,250.01 depreciation in year 8

Have students complete AS 14.4.

Q12. What are some suggestions on using depreciation for maximum advantage?

A12. 1) **Use good record keeping system.**
2) **Use expensing and regular MACRS on purchases if the business owes tax.**
3) **Use alternative MACRS method on purchases in years of low taxes to save deductions for future years.**

Discuss when to use each method of depreciation.

F. Other activities

It is suggested that a computer program on depreciation be obtained, and students should be allowed to use it to compare methods of depreciation.

G. Conclusion

The accurate management of depreciation can help increase after tax income. Basis provides the first step in determining depreciation. The manager must determine if expensing, depreciation, or both are going to be used. The type of item will determine the property class and the depreciation method used. The time of year in which the item is purchased may affect which convention is used to calculate the first year depreciation. All items depreciated using a declining-balance method must switch-over to straight-line depreciation when the amount that could be claimed using straight-line depreciation exceeds the amount calculated using the declining-balance method.

H. Competency

Calculate the depreciation of an investment.

I. Answers to Evaluation

1. d
2. $200 + $250 = $450
3.

Depreciation Method	Useful Life	Example
200% declining balance	3 years	Breeding swine
200% declining balance	5 years	Pickup
200% declining balance	7 years	Fences
150% declining balance	15 years	Orchards
Straight-line	27½ years	Residential Rental property
Straight-line	31½ years	Commercial Business property

NOTE: Other examples may be appropriate. The instructor will need to check for accuracy. Review Study Question 6 for additional answers.

4. (200%/5 years) x $5,000 x 1/2 = $1,000

5. Use the midquarter convention when more than 40 percent of the basis within a property class is obtained in the last quarter of the year.

6. $\frac{\$25,000}{40} \times \frac{8.5}{12} = \$442.71$

7.

Year	MACRS	Use	Straight Line Comparison
1	(200%/5 years) x 10,000 x 1/2 = 2,000	←	(10,000/5.5) x 1/2 = 909
2	(200%/5 years) x (10,000-2,000) = 3,200	←	8,000/4.5 = 1,778
3	(200%/5 years) x (8,000-3,200) = 1,920	←	4,800/3.5 = 1,371
4	(200%/5 years) x (4,800-1,920) = 1,152	←	2,880/2.5 = 1,152
*5	(200%/5 years) x (2,880-1,152) = 691	→	1,728/1.5 = 1,152
6	Claim remaining basis in year 6	→	= 576

*NOTE: Switch to straight-line in year 5.

J. Answers to assignment sheets

1. AS 14.1 - Basis and Expensing

   1. $75 + $175 = $250 basis
   2. 2 x $500 = $1,000
   3. Yes
      $10,000 - $175 = $9,825
   4. $10,000

2. AS 14.2

Name ____________________

MACRS CONVENTIONS

Directions: In the following situations, determine the property class and appropriate MACRS convention for each item. Assume items were purchased the same year.

Month of Purchase	Amount	Item	Property Class	MACRS Convention
Situation 1: Jimmy				
February	$ 2,500	dairy cattle	5	Midyear
February	$ 4,000	grainbin	7	Midyear
December	$ 2,000	computer	5	Midyear
December	$47,000	feed store	31 1/2	Midmonth
Situation 2: Virginia				
January	$47,000	feed store	31 1/2	Midmonth
March	$14,000	pickup	5	Midquarter
November	$13,000	barn	20	Midquarter
Situation 3: Harry				
March	$ 7,000	orchard	15	Midquarter
July	$ 1,500	breeding sheep	5	Midquarter
August	$ 1,800	fence	7	Midquarter
October	$ 6,000	used car	5	Midquarter
December	$ 1,800	fence	7	Midquarter

Name: ______________________________

Regular MACRS Methods and Property Classifications

Property	Method*	Property Classes	Examples:
Personal Property	Double Declining Balance or 200% Declining Balance	3	breeding, hogs
		5	cars, trucks, breeding cattle, computers, breeding sheep
		7	most machinery and single purpose agricultural buildings
	150% Declining Balance	15	orchards and vineyards
		20	multi-purpose farm building
Real Property	Straight Line	27½	residential rental property
		31½	commercial property

*Except for 27½ and 31½ year property, all items within a property class entering service during a given year, must be depreciated by using the same method.

4. AS 14.4 - Calculating Depreciation

1)

	Declining Balance Comparison	Use	Straight-Line Comparison
year 1	(200%/7) x 10,000 x 1/2 = 1,429	⟵	(10,000/7.5) x 1/2 = 667
year 2	(200%/7) x (10,000-1,429) = 2,449	⟵	8,571/6.5 = 1,319
year 3	(200%/7) x (8,571-2,449) = 1,749	⟵	6,122/5.5 = 1,113
year 4	(200%/7) x (6,122-1,749) = 1,249	⟵	4,373/4.5 = 972
year 5	(200%/7) x (4,373-1,249) = 893	⟵	3,124/3.5 = 893
*year 6	(200%/7) x (3,124-893) = 637	⟶	2,231/2.5 = 892
year 7	(200%/7) x (2,231-637)	⟶	1,339/1.5 = 892
year 8	Remaining Basis value is deducted in year 8	⟶	447

*Switch over to straightline.

2)

($10,000/7) x 1/2 = $714.29	1st year depreciation
$10,000/7 = $1,428.57	depreciation years 2 through 7
$10,000 - $9,285.71 = $714.29	depreciation year 8

3)

($10,000/10) x 1/2 = $500	1st year depreciation
$10,000/10 = $1,000	depreciation years 2 through 10
$10,000 - $9,500 = $500	depreciation year 11

UNIT II - BUSINESS MANAGEMENT

Name ________________

Lesson 14: Calculating Depreciation for Tax Purposes

Date ________________

EVALUATION

Circle the letter that corresponds to the best answer.

1. What is the maximum amount that one can expense per year?

   a. $5,000
   b. $7,500
   c. $9,000
   d. $10,000

Complete the following short answer questions.

2. Paul bought three sows. He traded a boar with an undepreciated value of $200. He paid $250 cash difference. What is his basis on the sows?

3. Complete the following table.

Method	Property Class	Example
200% Declining balance	3 years	____________
____________	5 years	____________
____________	________	Fences
150% Declining balance	15 years	____________
Straight-line	27½ years	____________
Straight-line	31½ years	____________

4. Calculate the first year depreciation on a pickup with a basis of $5,000. Use 200% declining balance with a midyear convention.

5. Explain when to use the midquarter convention.

6. Calculate the first year depreciation on a rental house purchased April 6 with a basis of $25,000. Use alternative MACRS, 40 years.

7. Calculate the depreciation for a $10,000 pickup. Use the switch-over provision where applicable. Assume a midyear convention. Use regular MACRS.

HO 14.1

Recovery Periods for Selected Assets under ACRS, Regular MACRS and Alternative MACRS

	Recovery Period in Years		
ASSET	ACRS	Regular MACRS	Alternative MACRS
Airplane	5	5	6
Auto	3	5	5
Calculators	5	5	6
Cattle (dairy or breeding)	5	5	7
Communication equipment	5	7	10
Computer & peripheral equipment	5	5	5
Computer software	5	7	*12
Copiers	5	5	6
Cotton ginning assets	5	7	12
Farm buildings (general purpose)	19	20	25
Farm equipment & machinery	5	7	10
Fences (agricultural)	5	7	10
Goats (breeding or milk)	3	5	5
Grain bin	5	7	10
Greenhouse (single purpose structure)	5	7	15
Helicopter	5	5	6
Hogs (breeding)	3	3	3
Horses (non-race, less than 12 yrs. of age)	5	7	10
Horses (non-race, 12 yrs. of age or older)	3	3	10
Logging equipment	5	5	6
Machinery (farm)	5	7	10
Manufactured homes (rental or employee)	10	15	20
Office equipment (other than calculators, copiers, or typewriters)	5	7	10
Office fixtures	5	7	10
Office furniture	5	7	10
Orchards	5	15	20
Paved lots	5	15	20
Pickups	3	5	5
Property with no class life	5	7	12
Rental property (non-residential)	19	31.5	40
Rental property (residential)	19	27.5	40
Research property	5	5	*12
Sheep (breeding)	3	5	5
Single purpose agricultural structure	5	7	15
Solar property	5	5	*12
Tile (drainage)	5	15	20
Tractor units for use over-the-road	3	3	4
Trailer for use over-the-road	5	5	6
Truck (heavy duty, general purpose)	5	5	6
Truck (light, less than 13,000 lbs.)	3	5	5
Typewriter	5	5	6
Vineyard	5	15	20
Wind energy property	5	5	*12

*No class life specified. Therefore, 12 year default life assigned.

BASIS AND EXPENSING

Name ______________

1. Richard bought a used haywagon. He traded a hay rake that had an undepreciated value of $75. He paid $175 cash difference. What is his basis on the hay wagon?

2. Jerri traded a bull with an undepreciated value of $300 for two cows that cost $500 each. The difference was paid in cash. What is Jerri's basis on the cows?

3. Richard does not want to depreciate his hay wagon. Instead he decides to expense it. Can he do this, and if he can, how much more could he expense during the same tax year?

4. Jerri has $20,000 in taxable income this year. She has not yet used any expensing. How much could she lower her taxable income if she could take full advantage of expensing?

Name ____________________

MACRS CONVENTIONS

Directions: In the following situations, determine the property class and appropriate MACRS convention for each item. Assume items were purchased the same year.

Month of Purchase	Amount	Item	Property Class	MACRS Convention
Situation 1: Jimmy				
February	$ 2,500	dairy cattle	____	________
February	$ 4,000	grainbin	____	________
December	$ 2,000	computer	____	________
December	$47,000	feed store	____	________
Situation 2: Virginia				
January	$47,000	feed store	____	________
March	$14,000	pickup	____	________
November	$13,000	barn	____	________
Situation 3: Harry				
March	$ 7,000	orchard	____	________
July	$ 1,500	breeding sheep	____	________
August	$ 1,800	fence	____	________
October	$ 6,000	used car	____	________
December	$ 1,800	fence	____	________

Name: ____________________

Regular MACRS Methods and Property Classifications

Property	**Method***	**Property Classes**	**Examples:**
Personal Property	Double Declining Balance or 200% Declining Balance	3	
		5	
		7	
	150% Declining Balance	15	
		20	
Real Property	Straight Line	27½	
		31½	

*Except for 27½ and 31½ year property, all items within a property class entering service during a given year, must be depreciated by using the same method.

CALCULATING DEPRECIATION

Name ______________

Using the following information, calculate depreciation using regular MACRS, optional straightline, and alternative MACRS. (Show all your work).

Julie purchased a graindrill in July for $10,000. This was the only purchase for the year.

1) Regular MACRS

2) Optional straightline

3) Alternative MACRS

UNIT II - BUSINESS MANAGEMENT

Lesson 15: Managing Risk in the Agricultural Business

Objective: The student will be able to identify ways of managing risk in business.

Study Questions

1. **What methods can be used to reduce risk in a business?**
2. **What is insurance, and why do agricultural businesses need it?**
3. **How can diversification help reduce risk?**
4. **What are some price protection strategies that reduce risk?**
5. **How does production contracting function as a method of reducing risk?**
6. **How can rental or leasing agreements be used to reduce risk?**

Student Reference

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.

Teacher References

1. Mortenson, W.P.; R.A. Luening. The Farm Management Handbook. 5th ed. Danville, IL: Interstate Publishers, 1972.
2. Duft, Kenneth. Principles of Management in Agribusiness. 1st ed. Reston, VA: Prentice Hill, 1979.
3. Rhodes, James V. The Agricultural Marketing System. 2nd ed. New York: John Wiley & Sons, 1983.
4. Campbell, Gerald. Producer Marketing Management: Primer on Agricultural Options. North Central Regional Extension Publication #217.
5. Transparency Master
    a) TM 15.1: Methods of Reducing Risk

UNIT II - BUSINESS MANAGEMENT

Lesson 15: Managing Risk in the Agricultural Business

TEACHING PROCEDURES

A. Review

B. Motivation

Ask students how many of them would be willing to bet $10,000 that something will or will not happen. Tell them that if they operate an agricultural business, they risk losing that much or more. To help reduce the risk, it is necessary to understand risk management.

C. Assignment

D. Supervised study

E. Discussion

Q1. **What methods can be used to reduce risk in a business?**

A1.
1) Insurance
2) Diversification
3) Price protection
4) Production contracting
5) Rental or leasing agreements

Ask students to discuss possible methods of reducing risk. (TM 15.1)

Q2. **What is insurance, and why do agricultural businesses need it?**

A2.
1) Insurance is an agreement between the insured and the insurance company. The company provides financial protection in return for regular payments by the insured.
2) Agricultural businesses need insurance to provide protection in the event of a major economic or financial loss that could cripple the company.

Discuss how insurance can help reduce risk. Insurance is discussed in more detail in lesson 16.

Q3. **How can diversification help reduce risk?**

A3.
1) Provides optional methods of income
2) Makes income more even
3) Still necessitates one main source of income equalling 40 to 60 percent of income

The idea behind diversification is that prices and production levels of various commodities will not be cycling in unison. Ask students to explain how diversification can be used to reduce risk.

Q4. What are some price protection strategies that reduce risk?

A4.
1) **Forward contracting - contracting to buy or sell a specific amount of a commodity or input for a specific price for specific time in the future**
   a) **Does not involve futures market**
   b) **Commodity actually traded**
2) **Hedging - using the futures market to transfer risk**
   a) **Contract to buy or sell a commodity at a specific price for delivery at specific time in the future**
   b) **Contract dissolved before delivery date**
3) **Options - paying a premium to have the option of being guaranteed a specific price in the future**

Ask students to discuss how pricing strategies can be used to help reduce risk. Point out the advantages and disadvantages of each. Additional lessons on hedging and forward contracting are included in Agricultural Marketing, available from the Instructional Materials Laboratory.

Q5. How does production contracting function as a method of reducing risk?

A5.
1) **Producer contracts with a purchaser to raise a certain quality and quantity of product.**
2) **The purchaser furnishes many of the production inputs.**
3) **The producer is paid a certain amount for each unit produced. Payment is done on a schedule.**

Production contracting is often used by vertically integraded firms. Firms that are vertically integrated own more than one part of the production process. This may include production farms, processing plants, wholesale stores and retail stores. One example is Tyson poultry products. Discuss production contracts with students.

Q6. How can rental or leasing agreements be used to reduce risk?

A6.
1) **Transfers risk of obsolescence to lessor**
2) **Transfers risk of high replacement costs to lessor**
3) **Transfers risk of maintenance and repair expenses to lessor**

Often it is more convenient to rent or lease than to own. One of the primary advantages of renting and leasing is that it requires less capital. The other major advantage is risk management, especially in areas where the technology is changing rapidly. This is especially true of the computer industry. Ask students to discuss how renting and leasing can be used to reduce risk.

F. Other activities

1. It is suggested that the instructor arrange for a business person to visit with the class about risk management.

2. Computer programs available through Missouri Cooperative Extension Service can also be used. Contact the local extension office to obtain current copies of these programs.

G. Conclusion

Risk management is an important aspect of any business. If the owner or manager of an agricultural business does not manage risk, the life of the business may be short. There are several methods for reducing risk such as insurance, diversification, price protection strategies, production contracting, and rental or leasing agreements.

H. Competency

Identify methods of reducing risk in a business.

I. Answers to Evaluation

1. a
2. d
3. b
4. c
5. d

UNIT II - BUSINESS MANAGEMENT

Lesson 15: Managing Risk in the Agricultural Business

Name ________________

Date ________________

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which of the following guarantees a specific price for a commodity?
   - a. Forward contracting
   - b. Insurance
   - c. Diversification
   - d. Price Protection

2. Why should individuals in production agriculture diversify?
   - a. To spread risk over more than one enterprize
   - b. To better utilize their time
   - c. To even out their income
   - d. All the above

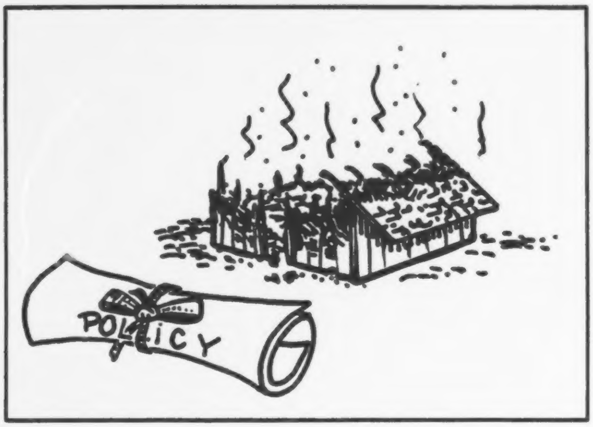
3. Entering a contract to buy or sell a commodity at some time in the future without the commodity changing hands is called ___________.
   - a. Forward contracting
   - b. Hedging
   - c. Using options
   - d. Production contracting

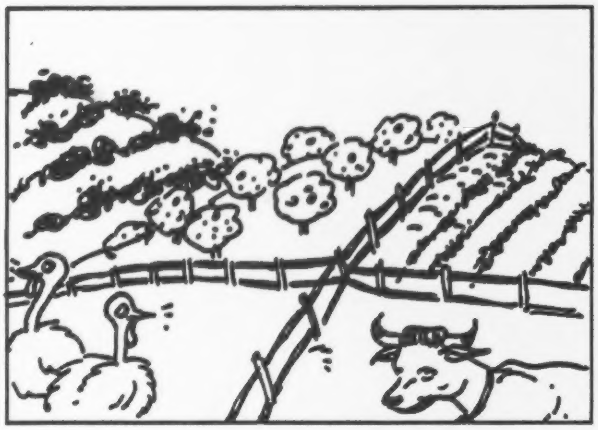
4. Companies that use up-to-date equipment often ___________ the equipment in order to avoid the risk of owning obsolete equipment.
   - a. Hedge
   - b. Diversify
   - c. Lease
   - d. Contract

5. How can risk be reduced in an agricultural business?
   - a. Purchase insurance
   - b. Diversify
   - c. Use price protection strategies
   - d. All the above

Methods of Reducing Risk

Insurance

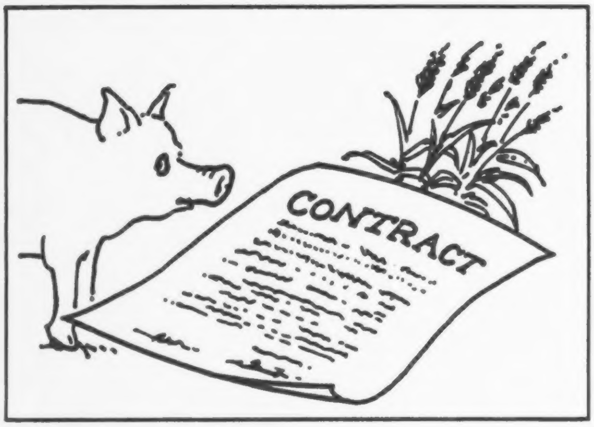


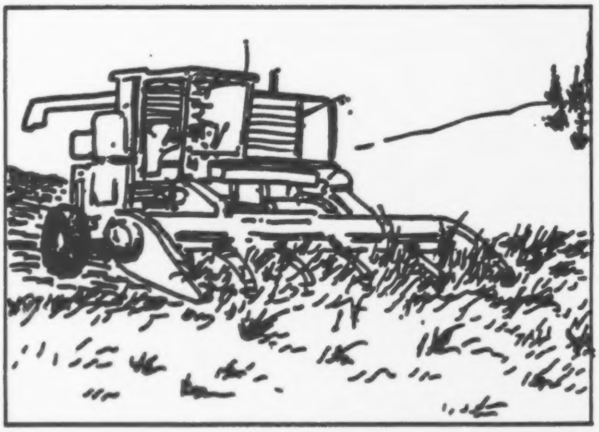


Diversification

Futures

Options





Rental/Leasing

UNIT II - BUSINESS MANAGEMENT

Lesson 16: Insurance Needs of an Agricultural Business

Objective: The student will be able to explain the insurance needs of an agricultural business.

Study Questions

1. **What are the uses of insurance?**
2. **What points should be considered when purchasing insurance?**
3. **What are the common types of insurance coverage?**
4. **What are some common types of property insurance, and what losses do they cover?**
5. **What is liability insurance?**
6. **What types of life insurance policies are available?**
7. **What factors affect one's life insurance needs?**
8. **What accident and health insurance policies should be secured?**

Student Reference

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit II.

Teacher References

1. University of Missouri-Columbia Extension Division agricultural publications
    a) GO 450: How to Shop for Life Insurance
2. Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.
3. Maedke, Wilmer O.; Ross E. Lowe; Charles A. Malouf. Consumer Education. 2nd ed. Encino, CA: Glencoe Publishing Company, 1984.

UNIT II - BUSINESS MANAGEMENT

Lesson 16: Insurance Needs of an Agricultural Business

TEACHING PROCEDURES

A. Review

B. Motivation

Ask students the following questions: How many of you or your parents carry insurance? What kind, and why? Why not just open a savings account and deposit enough money to cover a loss? Do needs vary?

People insure against "jolting losses": those that would be a financial jolt. Needs vary between individuals. Wrecking an old beat-up pickup would be less of a jolt than wrecking a new pickup.

C. Assignment

D. Supervised study

E. Discussion

Q1. What are the uses of insurance?

A1.
1) **Protects one financially from unexpected economic loss**
2) **Meets obligation to others who are injured or suffer a loss due to one's actions**
3) **Allows one to take financial risks for large purchases by functioning as collateral for a loan**

Discuss with students the many different uses for insurance. These include protecting against a loss due to fire, floods, tornadoes, and lawsuits. Insurance can also make it possible for one to buy a home or invest in a business without being at financial risk due to death or disability.

Q2. What points should be considered when purchasing insurance?

A2.
1) **Buy insurance that provides coverage for situations in which a loss is likely to occur.**
2) **Insure against losses that may lead to financial disaster.**
3) **Insure the irreplaceable or most necessary property first.**
4) **Don't insure anything that is easily affordable to replace.**
5) **Be sure the coverage is adequate.**
6) **Consider costs.**

Ask students to identify the points to consider in purchasing insurance. Write these as column headings on the board. Then ask students to discuss why each one of these points is important in purchasing insurance.

266

Q3. What are the common types of insurance overage?

A3. 1) Property insurance
2) Liability insurance
3) Life insurance
4) Accident and health insurance

These are the most common types of surance. Most individuals and businesses will have these types of ins ance coverage. Some of the individual's insurance needs may be prc ided by the employer. Discuss each type of insurance with students.

Q4. What are some common types of proper insurance, and what losses do they cover?

A4. 1) Package policies - protection agair a variety of hazards
2) Fire
    a) Can be obtained for buildinc furniture, machinery, and raw materials
    b) Requires separate policy for ilding content
3) Extended coverage - protection ag nst the destruction of personal property
    a) Protection against windstorm
    b) Protection against hail
    c) Protection against smoke dan ge
    d) Protection against floods
4) Theft insurance - protection agains losses due to theft
5) Title insurance - protection of land itles

Property insurance is designed to prote one from losses due to fire, weather, accidents, theft, or unclear land titles. These insurance policies reduce many of the risks of op ating an agricultural business. Discuss each type of property insurance ith the students.

Q5. What is liability insurance?

A5. Liability insurance provides financial pr tection for the policyholder in the event that he or she is held respo ible for the injury or loss of another party.

Q6. What types of life insurance policies are ailable?

A6. 1) Term - protection without an optio for savings
2) Permanent - protection for life plu savings
3) Endowment
    a) Endowment provides term prc ection and savings.
    b) A specific amount is paid the policy holder at policy maturity.
    c) This is often used to establish college fund.

There are many different companies ffering life insurance. It is recommended that one compare sev al different policies before purchasing one. Discuss each type of life nsurance policy with students.

Q7. What factors affect one's life insurance needs?

A7.
1) **Amount of cash available**
2) **Age**
3) **Level of debt**
4) **Cost of living**
    a) **Retirement income**
    b) **Protection of family if parent dies**
5) **Health**
6) **Income**

People need varying amounts of insurance during their life depending on several factors. Ask students to discuss these factors.

Q8. What accident and health insurance policies should be secured?

A8.
1) **Hospital and surgical pays for hospital room and board, x-rays, and surgery.**
2) **Major medical provides coverage for extremely large doctor bills.**
3) **Income protection/disability provides coverage for accidents or income protection if permanently injured.**

Discuss the types of medical insurance that should be secured. Many employers will offer these policies as job benefits. Self-employed people must purchase them individually.

F. Other activities

It is suggested that the instructor invite an insurance agent to speak to the students about insurance needs.

G. Conclusion

The insurance needs of individuals and businesses vary with each individual case. Insurance is designed to protect families and firms from jolting financial losses.

H. Competency

Explain the types of insurance needs of an agricultural business.

I. Answers to Evaluation

1. e
2. f
3. a
4. d
5. c
6. b
7. d
8. c
9. d

UNIT II - BUSINESS MANAGEMENT

Name ____________

Lesson 16: Insurance Needs of an Agricultural Business

Date ____________

EVALUATION

Match each term on the right with the correct definition on the left by placing the letter in the correct space.

1. ___ Insurance policy with face value paid to heirs only
2. ___ Income protection if permanently injured
3. ___ Provides protection only
4. ___ Large doctor bills
5. ___ Room and board medicine, X-rays
6. ___ Planning for children's college tuition

a. Term
b. Endowment
c. Hospital and surgical
d. Major medical
e. Whole life
f. Income protection/disability

Circle the letter that corresponds to the best answer.

7. Which of the following is a reason why standard of living affects life insurance needs?

   a. Age
   b. Level of debt
   c. Cash available
   d. Retirement income

8. Which type of insurance policy should be selected to provide additional coverage against damage or destruction of the contents of a building?

   a. Fire Insurance
   b. Hail Insurance
   c. Extended coverage insurance
   d. Theft insurance

9. Why is it important to purchase an insurance policy that adjusts for inflation?

   a. Inflation affects the value of the policy.
   b. Non-adjusting policies purchased many years previously may offer inadequate coverage.
   c. Items may become more expensive to replace.
   d. All the above

UNIT II - BUSINESS MANAGEMENT

Lesson 17: Cooperating Agencies in Agriculture

Objective: The student will be able to identify several cooperating agencies and services available.

Study Questions

1. **What agencies cooperate with agricultural businesses?**
2. **What services are available from ASCS?**
3. **What services are available from SCS?**
4. **What services are available from FmHA?**
5. **What services are available from University Extension?**
6. **What services are available from MDC?**
7. **What services are available from SBA?**
8. **What assistance does Missouri agricultural education provide?**

Student Reference

1. Agricultural Management and Economics (Student Reference). University of Missouri: Instructional Materials Laboratory, 1987. Unit II.

Teacher References

1. 1986 Fact Book of United States Agriculture. United States Department of Agriculture, Publication 1063.
2. Osborn, Donald.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd. Reston, VA: Reston Publishing Co., Inc., 1983.

Lesson 17: Cooperating Agencies in Agriculture

TEACHING PROCEDURES

A. Review

B. Motivation

Ask students to identify where they could find information concerning current farm programs and how these programs are designed to affect agriculture. Ask students to identify other agencies which are involved with agriculture.

C. Assignment

D. Supervised study

E. Discussion

Q1. What agencies cooperate with agricultural businesses?

A1.
1) **Agricultural Stabilization and Conservation Service (ASCS)**
2) **Soil Conservation Service (SCS)**
3) **Farmers Home Administration (FmHA)**
4) **University Extension**
5) **Missouri Department of Conservation (MDC)**
6) **Small Business Administration (SBA)**
7) **Missouri Agricultural Education**

Ask students to discuss possible sources of various programs and activities currently available to agricultural business people. Some information has been provided in the following questions. Each instructor should contact the local agencies for more information.

Q2. What services are available from ASCS?

A2.
1) **Administration of government farm assistance programs**
2) **Establishing and maintaining conservation programs**
3) **Aerial photo of land**

Ask students how many of them or their parents have obtained an aerial photo of their farm or property? Discuss with students other services available from ASCS.

Q3. What services are available from SCS?

A3.
1) **Administration of government soil and water conservation programs**
2) **Conservation and engineering assistance**
3) **Soil surveys**
4) **Emergency watershed protection**

5) **Information assistance**
    a) **Terraces**
    b) **Conservation tillage systems**
    c) **Soils**
    d) **Ponds**
    e) **Diversions**
6) **Assistance with conservation plan**

Discuss how SCS frequently works with ASCS in implementing the various government programs. SCS may provide much of the "leg work" in implementing the various programs even though the program is under ASCS control.

Q4. **What services are available from FmHA?**

A4. 1) **Provides financial assistance to producers who can't get financing from other sources**
    a) **Bank loans**
    b) **Direct government loans**
2) **Provides business and industrial loans to companies that will provide employment**
3) **Provides housing loans**
4) **Provides financial counseling**

Individuals may need to meet eligibility requirements when obtaining aid from the Farmers Home Administration. These requirements change frequently. FmHA isn't the only agency that has eligibility requirements.

Q5. **What services are available from University Extension?**

A5. 1) **Provides information**
    a) **Agriculture**
    b) **Home economics**
    c) **Business and industry**
    d) **Community development**
2) **Performs research**
3) **Operates 4-H programs**

University Extension, formerly called Missouri Cooperative Extension Service, provides information and performs research on a variety of topics, and operates the 4-H program.

Q6. **What services are available from MDC?**

A6. 1) **Protection, management, and conservation of fish, wildlife, and forestry resources**
2) **Educational programs**
3) **Individual and commercial permits**
4) **Assistance**
    a) **Maintaining and improving wildlife habitat and ponds**
    b) **Controlling damage caused by wildlife**
    c) **Managing forested areas**

The Missouri Department of Conservation provides information on a variety of conservation subjects. The material is available free of charge or for a minimal charge. Check with the local conservation office or agent to see what is available.

Q7. What services are available from SBA?

A7.
1) **Works through Small Business Development Centers and SCORE Chapters**
2) **Provides technical expertise to small businesses**
3) **Provides financial guidance to small business**

The Small Busliness Administration is a federal agency that works through Small Business Development Centers and SCORE Chapters. SCORE is the Service Corps of Retired Executives. Both are located throughout the state.

Q8. What assistance does Missouri agricultural education provide?

A8. Provides educational opportunities
1) **Indepth instruction in production and agribusiness**
2) **Topical update classes**
3) **Farm business management analysis program**
4) **Leadership education classes**

Missouri agricultural education provides many educational opportunities at community, junior college, and university levels. Point out to students that the agricultural instructor is a good source of information.

F. Other activities

It is suggested that the teacher arrange for a representative from one or two agencies to visit the class and spend about 30 minutes explaining the programs they have available. Encourage the representatives to be practical and use examples to which the students will be able to relate.

G. Conclusion

There are several agencies that work with agricultural businesses. These agencies can and do provide valuable services to agricultural business persons.

H. Competency

Identify several cooperating agencies and services available.

I. Answers to Evaluation

1. d
2. a
3. c
4. d
5. c

UNIT II - BUSINESS MANAGEMENT

Name ________________

Lesson 17: Cooperating Agencies in Agriculture

Date ________________

EVALUATION

Circle the letter that corresponds to the best answer.

1. The Farmers Home Administration provides loans to __________.

   a. Producers
   b. Business and industry
   c. Home buyers
   d. All the above

2. Which agency operates the 4-H program?

   a. University Extension
   b. Missouri agricultural education
   c. Small Business Administration
   d. Missouri Department of Conservation

3. The role of the Agricultural Stabilization and Conservation Service (ASCS) is to provide __________.

   a. Watershed protection
   b. Educational programs
   c. Administration of farm programs
   d. Provide low cost financing

4. The Soil Conservation Service (SCS) provides __________.

   a. Soil surveys
   b. Administration of soil and water conservation programs
   c. Conservation and engineering assistance
   d. All the above

5. From which agency could you obtain an aerial photo of your property?

   a. Missouri Department of Conservation
   b. Soil Conservation Service
   c. Agricultural Stabilization and Conservation Service
   d. University Extension

AGRICULTURAL MANAGEMENT AND ECONOMICS

UNIT III - PLANNING THE FARM BUSINESS

GETTING READY FOR THIS UNIT

Missouri Farm Planning Handbook (Manual 75) is the main student reference for this unit. The instructor will need to obtain copies of the necessary forms for each student. The forms needed for each lesson will be listed in the student reference section of that lesson. University of Missouri-Columbia Extension publications will also be used as student reference material. The necessary publications will also be listed under the student reference section for each lesson.

Students will identify the present situation of a farm. Using the information for the present situation and forms from Missouri Farm Planning Handbook (Manual 75), students will develop a current farm plan and a revised farm plan in an attempt to increase profitability. An example farm has been provided; however, it is strongly suggested that the instructor identify a local example instead.

It is also suggested that students work as a group when first revising the farm plan, then develop a revised plan individually. Each lesson in this unit builds on preceding lessons. Students will need to keep completed forms in their notebooks, as information from those forms may be needed to fill out remaining forms.

Satisfactory completion of the specific form(s) that addresses the competency for each lesson should be used to test for mastery of that competency. Most lessons also contain a written evaluation as an optional method of testing for that competency. The instructor is responsible for setting criteria for grades.

CONTENTS

Lesson 1–Setting Farm Business Goals III-1
- HO 1.1: Types of Goals

Lesson 2–Determining the Present Situation III-11
- HO 2.1: Inventory at Present for Sample Farm
- HO 2.2: ASCS Photo of Sample Case Farm
- HO 2.3: Soil Map of Sample Case Farm
- HO 2.4: Soil Test Report
- TM 2.1: Farm Map
- AS 2.1: Manager Self-Evaluation

Lesson 3–Planning a Profitable Cropping System III-35
- HO 3.1: Cash Receipts for Missouri's Highest Value Crops

Lesson 4–Determining Machinery Needs III-45
- HO 4.1: Hourly Repair Cost per $1,000 of List Price for Some Farm Machines
- HO 4.2: Annual Fixed Costs in Percent of List Price by Machine Category and Age
- AS 4.1: Determining Total Costs of a Tillage Operation

Lesson 5–Planning a Profitable Livestock System III-65
- HO 5.1: Value of Missouri Livestock Products
- HO 5.2: Important Characteristics of Various Enterprises

Lesson 6–Determining Labor Needs and Uses III-77
- HO 6.1: Utilizing Farm Labor

HO 6.2: Labor Requirements
AS 6.1: Example Labor Budget
Lesson 7–Determining the Amount of Capital Needed for a Farm Plan III-95
Lesson 8–Estimating Cash Income and Farm Business Profitability III-101
HO 8.1: Strategies That Can Be Used to Live with Uncertainty
AS 8.1: Estimating Income Taxes and Social Security Taxes
Lesson 9–Revising a Farm Plan III-111
HO 9.1: A Hypothetical Case Farm
AS 9.1: Farm Plan Grade Sheet

OBJECTIVES

1. The student will be able to identify appropriate goal-setting activities that could be used for a farm business.
2. The student will be able to determine the present use of resources for a farm business.
3. The student will be able to explain and demonstrate the principles of planning a cropping system.
4. The student will be able to calculate machinery needs.
5. The student will be able to explain and demonstrate the principles of planning a profitable livestock system.
6. The student will be able to estimate the labor needs for a farm business.
7. The student will be able to determine the amount of capital needed for a farm business.
8. The student will be able to estimate cash income and farm business profitability.
9. The student will be able to revise a farm plan.

NOTE: Percent of accuracy should be set by instructors to reflect passing grades within their school systems.

COMPETENCIES

1. Identify appropriate goal-setting activities that could be used for a farm business.
2. Determine the present use of resources for a farm business.
3. Explain the principles of planning a cropping system and be able to revise the cropping system of the case farm.
4. Calculate machinery needs.
5. Plan a profitable livestock system.
6. Plan for the labor needs of a farm business.
7. Determine the amount of capital needed for the farm business.

8. Estimate farm business cash income and profitability.

9. Revise a farm plan.

MOTIVATIONAL TECHNIQUE OR INTEREST APPROACH

1. Give the students a sheet of paper with the name of a local farm at the top. Tell them that they have just been selected as the manager of the farm. Ask them to make a list of things they will need to know in order to maintain the day to day operation of the business. Also ask them to make a list of people (agencies) they will need to be able to deal with as manager of the farm.

2. View tape seven "Ya Gotta Have Goals" of the Zig Ziglar series Born to Win. Discuss with students what would happen if a basketball team was playing without any goals. How can you play? How can you tell if the team is successful?

3. The instructor could obtain a copy of one of the agribusiness simulators for management training from Purdue University. The simulators can be used to teach business planning techniques, economic and business principles, and characteristics of the industry and firms in it. They are especially designed to teach financial management and to demonstrate the impacts of different business strategies. Four simulators are available: farm supply center, supermarket chain, and two grain elevator simulators. The software packages can be ordered from: Publication Distribution, Department of Agricultural Economics, Purdue University, West Lafayette, IN 47907.

EVALUATION

1. Give short, objective tests following each lesson and a more in-depth objective test at the conclusion of the unit.

2. Observe the changes in behavior as evidence of an improved ability of students to deal with problems in this unit using background acquired from earlier units.

3. Observe students' attempts to solve similar problems in their supervised occupational experience programs.

REFERENCES AND MATERIALS

1. Student Reference

   a) Missouri Farm Planning Handbook (Manual 75). University of Missouri-Columbia: College of Agriculture-Extension Division, 1986. Part IV. (Available from the Instructional Materials Laboratory)

   b) University of Missouri-Columbia Extension Division agricultural publications

1)	G00302:	1985 Custom Rates for Farm Services in Missouri
2)	G01200:	Machinery Management I - Field Machine Capacity
3)	G01201:	Machinery Management II - Timeliness
4)	G01204:	Machinery Management V - Power Requirement
5)	G781:	So You Want to Farm
6)	G700:	Managing Farm Labor

2. Teacher References

   a) Finner, Marshall F. Farm Machinery Fundamentals. Madison, WI: American Publishing Company, 1978.

   b) Jobes, Raleigh; Jim Steward. Farm and Ranch Businesses Management. Moline, IL: Deere and Company.

   c) Missouri Farm Facts. Columbia: Missouri Agricultural Statistics Office, Missouri Department of Agriculture, 1986.

   d) Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.

   e) Plain, Ron. "1986 Tax Reform Act–Impact on Agriculture." Farm Management Newsletter. Columbia, MO: Missouri Cooperative Extension Service, Dec. 29, 1986.

   f) University of Missouri-Columbia Extension Division agricultural publication

      1) G00302: Custom Rates for Farm Services in Missouri

AGRICULTURAL MANAGEMENT AND ECONOMICS

UNIT III - PLANNING THE FARM BUSINESS

MAJOR COMPETENCY PROFILE

Directions: Evaluate the student by checking the appropriate number or letter to indicate the degree of competency. The rating for each task should reflect **employability readiness** rather than the grades given in class.

Rating Scale:
3 **Mastered** - can work independently with no supervision
2 **Requires Supervision** - can perform job completely with limited supervision
1 **Not Mastered** - requires instruction and close supervision
N **No Exposure** - no experience or knowledge in this area

3	2	1	N	
				Planning the Farm Business
				1. Identify appropriate goal-setting activities that could be used for a farm business.
				2. Determine the present use of resources for a farm business.
				3. Explain the principles of planning a cropping system and be able to revise the cropping system of the case farm.
				4. Calculate machinery needs.
				5. Plan a profitable livestock system.
				6. Plan for the labor needs of a farm business.
				7. Determine the amount of capital needed for the farm business.
				8. Estimate farm business cash income and profitability.
				9. Revise a farm plan.

Agricultural Management and Economics Unit III - Planning the Farm Business

CLASS/SECTION ____________

STUDENTS:	Identify appropriate goal-setting activities that could be used for a farm business.	Determine the present use of resources for a farm business.	Explain the principles of planning a cropping system and be able to revise the cropping system of the case farm.	Calculate machinery needs.	Plan a profitable livestock system.	Plan for the labor needs of a farm business.	Determine the amount of capital needed for the farm business.	Estimate farm business cash income and profitability.	Revise a farm plan.	

UNIT III - PLANNING THE FARM BUSINESS

Lesson 1: Setting Farm Business Goals

Objective: The student will be able to identify appropriate goal-setting activities that could be used for a farm business.

Study Questions

1. **What are the types of goals?**
2. **Why should one set goals?**
3. **What are some important factors to consider in setting goals?**
4. **What are some typical problems in setting goals?**
5. **What are examples of conflicts in family goals?**

Student References

1. Missouri Farm Planning Handbook (Manual 75). University of Missouri-Columbia: College of Agriculture-Extension Division, 1986. Part IV.
2. Handout
    a) HO 1.1: Types of Goals

Teacher References

1. Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd Ed. Reston, VA: Reston Publishing Co., Inc., 1983.
2. Jobes, Raleigh; Jim Steward. Farm and Ranch Businesses Management. Moline, IL: Deere and Company, 1986.

Lesson I: Setting Farm Business Goals

TEACHING PROCEDURES

A. Introduction

This unit combines concepts from Unit I, "Economic Principles"; and Unit II, "Business Management." These are the skills needed for planning the farm business. A quick review of units I and II may be helpful in preparing the students for this lesson.

B. Motivation

Relate the concept of goal setting to the strategy of a football team. To score with every play is not practical. Therefore, a football team will use a series of plays in an effort to reach their overall goal of scoring. Personal goal setting is much the same way. It is helpful to have a series of goals to help plan where one wants to be.

C. Assignment

D. Supervised study

E. Discussion

Q1. **What are the types of goals?**

A1.
1) **Short-term - usually considered up to one year or a growing season**
2) **Intermediate-term**
    a) **Usually considered one to seven years**
    b) **Used to set growth rates**
3) **Long-term**
    a) **Usually longer than seven years**
    b) **College or retirement funds**

Discuss the types of goals and why all three need to be considered when planning the farm business.

Q2. **Why should one set goals?**

A2.
1) **To help establish a path toward what you wish to accomplish**
2) **To help anticipate and prepare for future needs**
3) **To identify high-profit areas**

There is truth in the old saying: "You can't get somewhere quickly if you don't know where you are going." Goal setting enables students to determine what is needed to reach their goals. The goal is where you want to be. The current status or where you are now needs to be determined. Then a plan should be developed on how to get from the current status to the goal.

Q3. What are some important factors to consider in setting goals?

A3. 1) Level of living desired
2) Amount of cash income needed
3) Gross farm income needed
    a) To provide family income needed
    b) Simple rule of thumb for gross farm income
        (1) Add the annual cash payments required on all capital debts to the estimated annual cash needs for family living.
        (2) Multiply this total figure by four.

    EXAMPLE: If estimated annual cash living costs are $19,000 and capital debt payments amount to $15,000, the $34,000 total would require a minimum of $136,000 gross farm income each year.
4) Fitting capital needs for family living with investments needed on the farm
    a) Capital needs for family
        (1) Appliances
        (2) Car
        (3) Home additions and improvements
    b) Investments for farm
        (1) Tractor
        (2) Barn
        (3) Livestock
5) Process followed to obtain capital needs
    a) Agree on goals.
    b) Establish a general timetable of when to expect goals.
    c) Tie capital needs in with farm improvement needs.
    d) The result is working toward the same goals.

List on the board factors that should be considered when setting goals. Work through an example of a typical family situation such as the one presented in Part IV of Manual 75. According to the Mail-In Record Program for 1980, the average Missouri farm family spent $18,719 on family living expenses.

Q4. What are some typical problems in setting goals?

A4. 1) Business is not large enough, or it is too large.
2) Gross income and net returns are not high enough from the present system.
3) Present livestock enterprises are not well-suited to the farm.
4) Physical layout of the farm is not efficient.
5) Farmstead is not arranged for convenience, safety, and attractiveness.
6) Opportunities for off-farm income are not available.

Ask students to discuss some of the typical problems in setting goals. Point out that the reason for the conflict is that there is a limited amount of financial resources available.

Q5. What are examples of conflicts in family goals?

A5. 1) Short-term - pickup for business, car for daughter
2) Long-term - education for the children, home remodeling, new tractor, payments on debts

There may be conflicts in family goals because the farm business and members of the family need certain things. To help avoid this conflict, it is important to set adequate goals and priorities on how the farm income will be utilized.

F. Other activities

Invite a local farmer to discuss how goal setting is used in their farm business.

G. Conclusion

The first step in planning a farm business is to determine different levels of attainable goals. This will provide a pathway for success by developing a plan to make the best use of available resources.

H. Competency

Identify appropriate goal-setting activities that could be used for a farm business.

I. Answers to Evaluation

1. a. Short-term
   b. Intermediate-term
   c. Long-term

2. Any three of the following:
   Level of living desired
   Amount of cash income needed
   Gross farm income needed
   Fitting capital needs for family living with investments needed on the farm
   Process followed to obtain capital needs

3. There may be conflicts in family goals because the farm business and family members are competing for limited financial resources. To avoid this conflict it is important to set adequate goals and priorities on how farm income will be utilized.

4. d
5. a

UNIT III - PLANNING THE FARM BUSINESS

Lesson I: Setting Farm Business Goals

Name ______________

Date ______________

EVALUATION

Complete the following short answer questions.

1. Identify the three types of goals.

   a.

   b.

   c.

2. Identify three factors to consider when setting goals.

   a.

   b.

   c.

3. Explain why family conflicts may arise in setting goals.

Circle the letter that corresponds to the best answer.

4. Why should one set goals?

   a. As a measure of success
   b. To provide a plan of action
   c. To identify higher profit areas
   d. All the above

5. How can success be thought of?

   a. Achieving one's goals
   b. Making a lot of money
   c. Being well-known and respected
   d. Being in a position of authority

TYPES OF GOALS

Consider the strategy used in a football game. Do players in this sport try to score points with each play? No, they work as a team to set short term goals, advance a few yards down field. These goals can be thought of as steps to scoring.

Short term goals - Short term goals can usually be reached in less than a year. In football this might include a single play of advancing a few yards down the field. In planning a farm business, it might include increasing the number of pigs sold per litter this year or getting the crops planted two weeks earlier than normal. Once a short term goal has been met, then the manager can concentrate on reaching the next short term goal.

Intermediate Goals - In a farm business it usually takes between one and seven years to reach intermediate goals. In football an intermediate goal might be a series of plays designed to move the team into scoring position. In farm business, intermediate goals include paying for a tractor, attending a technical school or college, saving the down payment for a house or land, etc. Intermediate goals can also be used to plan a desired growth rate.

Long term goals - In the farm business, it frequently takes over seven years to achieve long term goals. In the football game, for example, a long term goal might be scoring, winning the game or having a successful season. In a farm business long term goals are used to determine the course for the business. Short and intermediate term goals are designed to help the business eventually meet its long term goal. Examples of long term goals might include a fully paid college fund, an established retirement fund, or owning a house or farm.

UNIT III - PLANNING THE FARM BUSINESS

Lesson 2: Determining the Present Situation

Objective: The student will be able to determine the present use of resources for a farm business.

Study Questions

1. **What resources determine farm business income?**
2. **What three steps are needed in a land inventory?**
3. **What are the two types of farm business labor?**
4. **What are possible solutions to reduce surplus labor on small farm businesses?**
5. **What determines labor efficiency on large farm businesses?**
6. **How are capital resources inventoried?**
7. **How is management ability evaluated?**

Student References

1. Missouri Farm Planning Handbook (Manual 75). Univeristy of Missouri-Columbia: College of Agriculture-Extension Division, 1986. Part IV
    a) Form 2 - Land Use Classification
    b) Form 3 - Farm Investment Capital
    c) Form 4 - Cropping System
    d) Form 5 - Livestock System
    e) Form 6 - Summary: Capital, Labor, Income, and Returns
2. Handouts
    a) HO 2.1: Inventory at Present for Sample Farm
    b) HO 2.2: ASCS Photo of Sample Case Farm
    c) HO 2.3: Soil Map of Sample Case Farm
    d) HO 2.4: Soil Test Report
3. Assignment Sheet
    a) AS 2.1: Manager Self-Evaluation

Teacher References

1. Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.

2. University of Missouri: College of Agriculture-Extension Division Guide G00302 - Custom Rates for Farm Services in Missouri

3. Transparency Master

    a) TM 2.1: Farm Map

Lesson 2: Determining the Present Situation

TEACHING PROCEDURES

A. Review

Review the previous lesson.

B. Motivation

Explain the plan of using the case farm and that the class will take a field trip to look at the farm to determine what the students have to work with. Explain that they will have an opportunity to revise the case farm and the goal will be to maximize net farm income.

NOTE: Before the field trip, the instructor should have an inventory of livestock and machinery and copies of ASCS maps with acres for all fields that can be drawn from an aerial photo and duplicated. It would be best if the field trip to look at the farm could be made by bus so students are kept together and can be driven over the farm. Students can get a mental picture of the farm in one period. They could also walk the farm using procedures from Manual 75.

C. Assignment

D. Supervised study

E. Discussion

Q1. What resources determine farm business income?

A1.
1) **Land - can be rented or owned**
2) **Labor - must be fully utilized if maximum profit is the goal**
3) **Capital - includes equipment, buildings, etc.**
4) **Management - decision-making ability of owner or operator**

List the four resources on the board and discuss them. Each resource substitutes for the other resources.

Q2. What three steps are needed in a land inventory?

A2.
1) **Make a map of the farm using mapping symbols.**
2) **Summarize land classes.**
3) **Obtain the results of a soil test.**

Distribute copies of HO 2.1 through HO 2.4. List and discuss the steps in a land inventory. Distribute copies of Form 2. Review the soil test results with students. Have students complete the land inventory of the case farm. Use TM 2.1 to draw the case farm.

Q3. What are the two types of farm business labor?

A3.
1) Variable labor - part-time farmers or part-time helpers
   a) Live on a farm
   b) Work off the farm
   c) Derive the major part of their income from off-farm sources
2) Fixed labor full-time farmers
   a) Live on a farm
   b) Work only on a farm
   c) Receive almost all of their income from the farm
   d) May include full-time hired hands.

List the two types of farm labor and identify characteristics of each. The difference between full-time farmers and part-time farmers is not as great as one would imagine. There are some special problems that part-time farmers face, usually due to the smaller size of their operation. They both have to determine goals, objectives, and values. They both use the same decision-making methods and principles, but they do this in a somewhat different framework.

Q4. What are possible solutions to reduce surplus labor on small farm businesses?

A4.
1) Secure more land by renting or purchasing.
2) Farm more intensively.
3) Add appropriate livestock.
4) Seek off-farm employment and/or custom work.

Have the students discuss possible solutions to reduce surplus labor.

Q5. What determines labor efficiency on large farm businesses?

A5.
1) Size and kind of equipment
2) Size and arrangement of fields, buildings, etc.
3) Distribution of labor needs during the year
4) Methods of doing work
5) Managerial skills of the boss
6) Skills and attitudes of the workers

Have students discuss these efficiency considerations. Also, point out that land, capital, and management affect these.

Q6. How are capital resources inventoried?

A6.
1) Written record of all capital items should be completed.
2) This information should be transferred to the financial statement to determine the farmer's equity.
3) Information from the inventories should also be transferred to Form 3.

Explain that, in the case farm, Form 3 will be used in determining the capital used at present. Plan to assume that there are no debts in the present plan.

Q7. How is management ability evaluated?

A7. Individuals can assess their own management ability by completing a management self-evaluation form.

Have students complete AS 2.1 and discuss how it relates to management ability.

The next two days are spent in class completing Form 2 through Form 6. The teacher could have a transparency of these forms and give each student a copy so the forms could be completed together. Point out that line 22 and line 27 on Form 6 are the important figures. These are used in comparing alternative plans. Students will need copies of HO 2.1, 2.2, 2.3 and 2.4. A few assumptions will have to be made:

a) If the revised plan requires more labor than is available from the family, it will be charged at $800 per month or $4 per hour.

b) Assume there are no debts at present and if the student wants to use additional capital in the revised plan, it will be limited to 50 percent more than the present and charged at 14 percent. (If line 5 of Form 6 is $100,000 on the present situation, it will be limited to $150,000 on the revised plan.)

c) Assume no off-farm income for the present plan.

d) If custom work is used, use UMC Guide G00302 Custom rates for farm services in Missouri for the base. (Seventy-five percent of the typical machinery charge is for machine and 25 percent is for labor.)

e) Students will need the instructor to provide part of the information on forms 4 and 5. They will then be able to work through the rest of these forms.

F. Other activities

It is suggested that students use a local farm with which they are familiar to develop a separate farm plan.

G. Conclusion

Determining the present situation of a farm business is a must before planning can begin. After following the suggestions in this lesson, students will be able to determine the present situation of a farm business.

H. Competency

Determine the present use of resources for a farm business.

I. Answers to Evaluation

1. c
2. a
3. d
4. Any three of the following:
   Size and kind of equipment
   Size and arrangement of fields, buildings, etc.
   Distribution of labor needs during the year
   Methods of doing work
   Managerial skills of the boss
   Skills and attitudes of the workers
5. a. Make a map of a farm.
   b. Summarize land classes.
   c. Obtain results of soil tests.

J. Answers to Manual 75 forms

See the following pages.

111-17

FM 7532
Farm Mgt. Ext.
Univ. of Mo.

FORM 2
LAND USE CLASSIFICATION*

Present Plan ✓
Alternative No.____

			PRESENT (OR PROPOSED) LAND USE					
			CLASS 1	CLASS 2	CLASS 3	CLASS 4	CLASS 5	CLASS 6
	Field letter	Acres in field	Intensive row cropping	Limited row cropping	Small grain continuous if terraced or rotation of sm. grain and hay	Permanent pasture	Timber or woods pasture	Farmstead roads, etc.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	A	40.0		40				
2	B	15.8		16				
3	C	13.4		13				
4	D	7.0			7			
5	E	4.0					4	
6	F	8.0		8				
7	G	8.3		8				
8	H	1.5		2				
9	I	2.5					3	
10	J	17.5		17				
11	K	7.0		7				
12	L	25.0					25	
13	M	15.0					15	
14	N	3.0		3				
15								
16								
17								
18								
19								
20								
21								
22	Total acres	168.0						
23	Class 1 acres							
24	Class 2 acres			114				
25	Class 3 acres				7			
26	Class 4 acres							
27	Class 5 acres						47	
28	Class 6 acres							17

*See other side for definition of land use classes.
Sum of acres in Classes 1-6 should equal total on Line 22.

SOURCE: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

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FM 7533
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FORM 3
SUMMARY: FARM INVESTMENT CAPITAL

Present Plan ✓
Alternative No.____

	Item & description	Year to invest	New cost	Average value[1]	Total value
	(1)		(2)	(3)	(4)
1	Breeding livestock (present or alternative):				
2	Cows 40 (units) x $ 400 /unit =			$ 16,000	
3	Sows ____ (units) x $____ /unit =				
4	Other ____ (units) x $____ /unit =				
5	TOTAL BREEDING LIVESTOCK CAPITAL (sum Lines 2, 3, 4)				$ 16000
6	Machinery & equipment (present)			$12,900	
7	Added machinery & equipment:[2]				
8			$	$	
9					
10					
11					
12					
13	TOTAL MACHINERY & EQUIPMENT CAPITAL (sum Lines 6, 8, 9, 10, 11, 12)				$ 12900
14	Buildings & facilities (present)			$	
15	Added buildings & facilities:[2]				
16			$	$	
17					
18					
19					
20	TOTAL BUILDING & FACILITIES CAPITAL (sum Lines 14, 16, 17, 18, 19)				$
21	Land & land improvements (present)[3] 185 ac. x $ 400 /acre =			$ 74000	
22	Added land & land improvements:[2]				
23			$		
24					
25	TOTAL LAND & LAND IMPROVEMENTS CAPITAL (sum Lines 21, 23, 24)				$ 74,000
26	TOTAL FARM INVESTMENT CAPITAL (sum Lines 5, 13, 20, 25)				$ 102,900

[1] Present system values for Lines 6 and 14 are depreciated values (such as those on depreciation schedule). For new machinery and equipment added in alternative system, average value equals approximately 1/2 of new cost. For new buildings, fences, and facilities added, average value equals approximately 3/4 of new cost. For non-depreciable items (such as land), average value equals new cost.

[2] Disinvestment may also be considered in alternative plan. Values of machinery, equipment, facilities, land, etc., not needed in alternative plan are entered as negative figures in Column 3.

[3] Does not include value of dwelling, farm buildings, fences, and facilities.

SOURCE: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

FM 7534
Farm Mgt. Ext.
Univ. of Mo.

FORM 4
SUMMARY: CROPPING SYSTEM

Present Plan ✓
Alternative No.____

			PER ACRE BUDGETS			BUDGET TOTALS			FARM FEED PRODUCTION			
	Crop & land use	Total acres[1]	Avg. yield	Income over variable costs	Hours direct labor	Produc-tion	Income over variable costs	Hours direct labor	Corn equiva-lent[2]	Silage tons	Hay tons	Pasture AUM's[3]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
						2x3	2x4	2x5				
1	Hay	20	2.5	55	6	50	1100	120			50	
2	Pasture	101	5.0	5	1.5	505	505	152				505
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17	TOTAL CROP ACRES	121										
18	Farmstead	17										
19	Idle land	47										
20	TOTALS	185					1605	272			50	505

[1] When land is double cropped, list first and second crops separately. Circle acreage of second crop and do not add circled figures in Col. 2.

[3] AUM = animal unit month.

[2] To calculate corn equivalent bushels, multiply feed grain yield in Column 6 by C.E. factor (corn = 1.0, grain sorghum = .95, barley = .77, and oats = .50).

SOURCE: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

FM 7535
Farm Mgt. Ext.
Univ. of Mo.

FORM 5
SUMMARY: LIVESTOCK SYSTEM

Present Plan ✓
Alternative No.____

			PER UNIT BUDGETS		PER UNIT FARM FEED REQUIREMENTS				BUDGET TOTALS		TOTAL FARM FEED REQUIREMENTS			
	Livestock unit	Total units	Income over var. costs	Hours direct labor	Corn equiv-alent	Silage tons	Hay tons	Pas-ture AUM's	Income over variable costs	Hours direct labor	Corn equiva-lent	Silage tons	Hay tons	Pasture AUM's
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
									2x3	2x4	2x5	2x6	2x7	2x8
1	Angus Cows	40	70	5.5			1.1	11.4	2800	220			44	456
2														
3														
4														
5														
6														
7	Total farm feed requirements (add Cols. 11, 12, 13, and 14)												44	456
8	Total farm feed available (Form 4, Cols. 9, 10, 11, and 12)												50	505
9	Farm feed surplus (+) or shortage (-) (difference of Lines 7 and 8)												+ 6	+49
10	Total Income Over Variable Costs (add Col. 9)								2800					
11	TOTAL HOURS DIRECT LABOR (add Col. 10)									220				
12	Adjustment of Income Over Variable Costs for Value of Surplus Pasture:													
13	If surplus pasture, multiply surplus 49 (Line 9, Col. 14) x $ 5 /AUM =								245					
14	ADJUSTED TOTAL INCOME OVER VARIABLE COSTS (subtract Line 13 from Line 10)								2555					

SOURCE: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

FM 7536
Farm Mgt. Ext.
Univ. of Mo.

FORM 6
SUMMARY: CAPITAL, LABOR, INCOME, & RETURNS

Present Plan ✓
Alternative No.____

	Item (1)	Details (2)	Totals (3)
	FARM INVESTMENT CAPITAL:		
1	Breeding livestock (Form 3, Line 5)	$ 16,000	
2	Machinery & equipment (Form 3, Line 13)	12,900	
3	Buildings & facilities (Form 3, Line 20)		
4	Land & improvements (Form 3, Line 25)	74,000	
5	AVERAGE FARM INVESTMENT CAPITAL (Form 3, Line 26)		$ 102,900
	DIRECT LABOR REQUIRED:		
6	Crop labor hours (Form 4, Line 20, Col. 8)	272 hrs.	
7	Livestock labor hours (Form 5, Line 11)	220 hrs.	
8	TOTAL HOURS DIRECT LABOR (sum Lines 6, 7)		492 hrs.
	INCOME OVER VARIABLE COSTS:		
9	Crop income over variable costs (Form 4, L. 20, Col. 7)	$ 1605	
10	Livestock income over variable costs (Form 5, L. 14)	2555	
11	TOTAL INCOME OVER VARIABLE COSTS (sum Lines 9 and 10)		$ 4,160
	OTHER CASH COSTS & NET CASH INCOME:[1]		
12	Hired labor: ______ no. man x $__________/year =	$	
13	Cash rent paid: ______ acres rented x $_______/acre =		
14	Real estate & property taxes (est. 0.5% of Line 5)	515	
15	Building insurance & repairs (est. 3% of Line 3)		
16	Miscellaneous expense (est. 2% of Line 11)	83	
17	TOTAL OTHER CASH COSTS (sum Lines 12, 13, 14, 15, 16)		$ 598
18	NET CASH FARM INCOME (Line 11 minus Line 17)		$ 3,562
	DEPRECIATION:[1]		
19	Machinery & equipment (est. 20% of Line 2)	$ 2580	
20	Buildings & facilities (est. 10% of Line 3)		
21	TOTAL DEPRECIATION (Line 19 + Line 20)		$ 2580
	RETURNS:		
22	Farm profit[2] (Line 18 minus Line 21)		$ 982
23	Family labor & mgt. charge (est.) 500 hrs. x $ 4.00 /hr.=	$ 2,000	
24	Return to farm investment capital (Line 22 minus Line 23)	STOPPED HERE	DUE TO
25	Rate earned on farm investment capital (L. 24 ÷ L. 5)	NEGATIVE	NUMBERS.?
26	Interest on farm investment capital (____% of Line 5)	$	
27	Return to family labor & management (Line 22 minus L. 26)		$

[1] Percentage estimates are only guidelines.

[2] Estimated return to family labor, farm investment capital, and management.

SOURCE: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

AS 2.1

Assignment sheet 2.1 is used to facilitate a discussion on desirable characteristics of a good manager. Therefore, there are no specific answers.

UNIT III - PLANNING THE FARM BUSINESS Name ______________

Lesson 2: Determining the Present Situation Date ______________

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which of the following resources determine farm business income?

   a. Land, capital, bank, hired help
   b. Labor, capital, livestock, crops
   c. Land, capital, labor, management
   d. Labor, management, luck, bank

2. Which of the following best describes fixed labor?

   a. Full time farmers
   b. Seasonal helpers
   c. Part time farmers
   d. Off farm income

3. Which of the following could be used to reduce surplus labor on small farms?

   a. Rent extra land
   b. Farm more intensively
   c. Seek off-farm employment
   d. All the above

Complete the following short answer questions.

4. Identify three factors that determine labor efficiency on large farm businesses.

   a.

   b.

   c.

5. Identify the three steps needed in a land inventory.

   a.

   b.

   c.

HO 2.1

Inventory at Present for Sample Farm*

185 Acres at $400/acre	=	$74,000
House (1960)	=	20,000
Total		**$94,000**

1 - 40 hp John Deere	=	$ 7,000
1 - 3-16" plow	=	1,400
1 - 12' disk	=	1,600
1 - 9' mower	=	2,000
2 - wagons	=	900
Total		**$12,900**

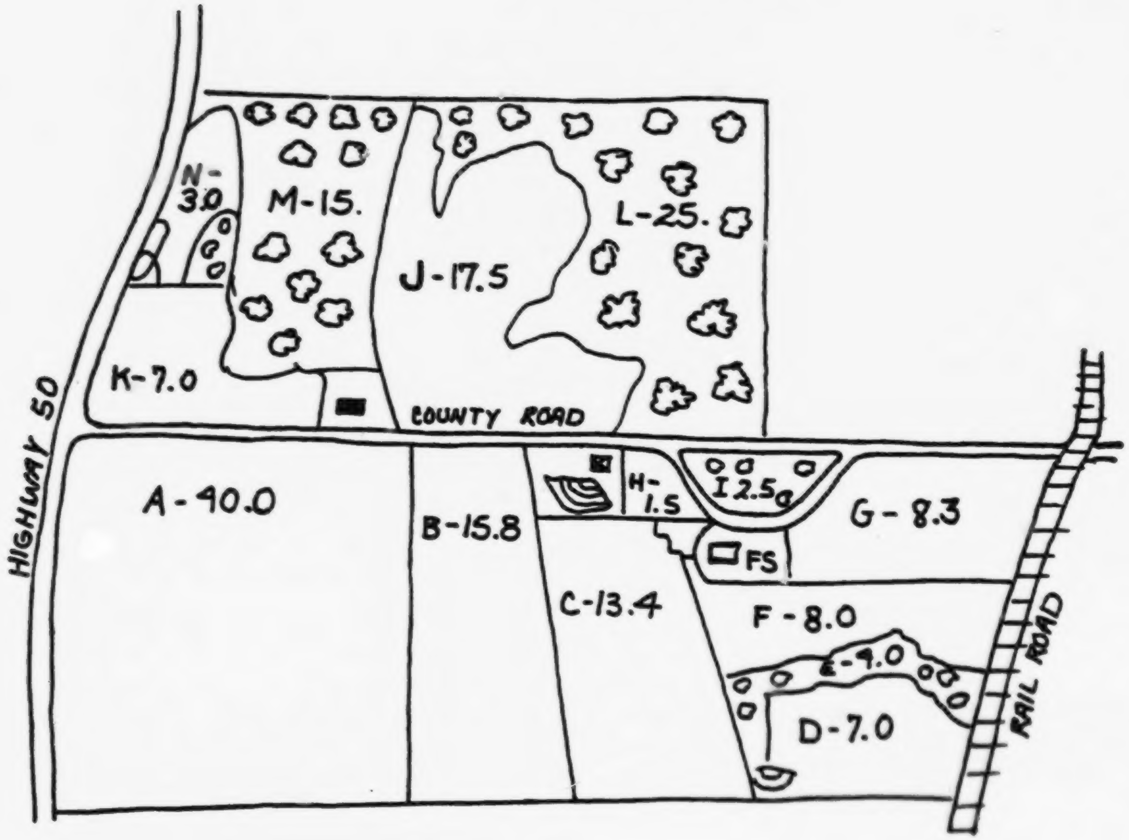
40 Angus Cows at $400/each Present operation - spring calving and selling fall calves at about 400 lbs. each	=	$16,000
Total		**$16,000**

Total Inventory	**$122,900**

***Use this information to complete form 3.**

ASCS Photo of Sample Case Farm*

Total acres = 185 acres
Farmstead, waste, roads, etc. = 17 acres
Timber (M,L,I,E) = 46.5 acres
Open land (A,B,C,D,F,G,H,J,K,N) = 121.5 acres

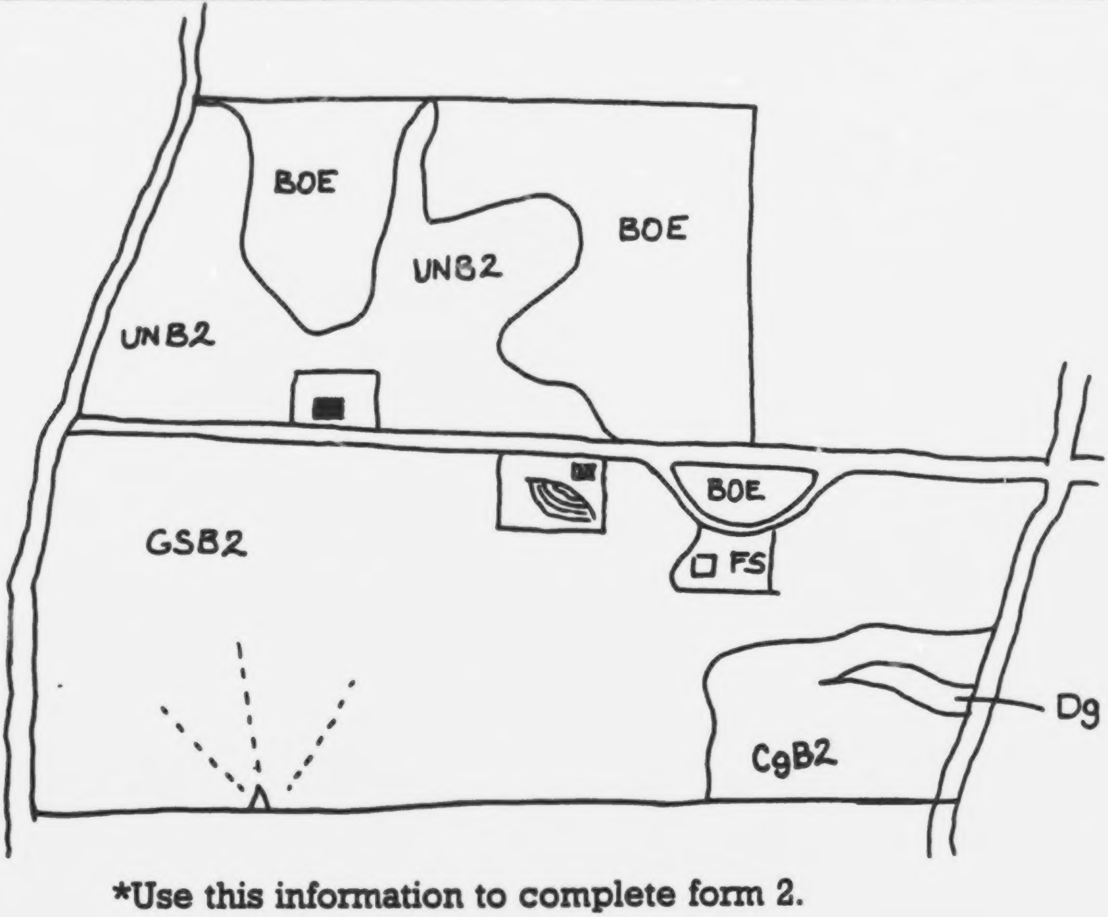

N-3.0
M-15.
J-17.5
L-25.
K-7.0
COUNTY ROAD
HIGHWAY 50
A-40.0
B-15.8
H-1.5
I-2.5
G-8.3
FS
C-13.4
F-8.0
E-9.0
D-7.0
RAIL ROAD

■ House (fair)
□ Barn (horse barn plan) Loft - 40' x 50' (good)
☒ Hog finishing floor - 50 hd. capacity (good)
✿ Timber

***Use this information to complete form 2.**

Soil Map of Sample Case Farm*

SYMBOL	SOIL TYPE	YIELDS C W B A	LIMITATIONS
BOE	Bodine Cherty 10-20% slope	-0-	Most in timber. Some may be cleared for pasture. Rocky and steep.
CgB2	Craig Silt Loam 2-10% eroded	40-20-0-1	Droughty, low in fertility, eroded. 2 yrs. small grain; 2 yrs. meadow. Don't terrace.
Dg	Dunning Silt Loam 1-2% slope	65-30-30-4	Surface drainage needed. Continuous row crop.
GSB2	Glensted Silt Loam 2-5% eroded	45-20-25-1.5	Plow layer 7". 1 yr. row crop, 1 yr. small grain, 1 meadow. Terrace.
UnB2	Union Silt Loam 2-10% eroded	50-28-0-2.5	Erosive, needs lime, 2 yr. row crop, 1 yr. small grain, 1 year meadow.



*Use this information to complete form 2.

HO 2.4

Missouri Cooperative Extension Service

University of Missouri & Lincoln University

Department of Agronomy
Extension Programs
214 Waters Hall
Columbia, MO 65211

SOIL TEST REPORT

Serial no.	Area	County	Region
F1456	22	107	07

Submitted	Processed
12/31/84	1/15/85

This report is for:

Soil sample submitted by:

FIELD INFORMATION

Field ID A2		Sample no. 0
Acres 40	Last Limed >5	Irrigated NO
Last crop *** NOT GIVEN ***		

SOIL TEST INFORMATION				RATING					
				Very low	Low	Medium	High	Very high	Excess
pH_s		4.8		***********					
Phosphorus	(P)	14.0	lbs/a	**********					
Potassium	(K)	59.0	lbs/a	*********					
Calcium	(Ca)	1124.0	lbs/a	********************					
Magnesium	(Mg)	322.0	lbs/a	**************************					
Zinc	(Zn)		ppm						

Organic matter: 2.4 % | Neut. acidity: 3.0 me | CEC: 7.2 me | Soil texture: SANDY LOAM

SUGGESTED ANNUAL TREATMENTS

Cropping options	Yield goal	Pounds per acre N	Pounds per acre P_2O_5	Pounds per acre K_2O
18 COOL SEASON GRASS HAY	3 T/A	120	65	160
18 COOL SEASON GRASS HAY	3 T/A	120	65	160
18 COOL SEASON GRASS HAY	4 T/A	160	70	195
18 COOL SEASON GRASS HAY	4 T/A	160	70	195

CORRECTIVE TREATMENTS

LIMESTONE		ZINC
Effective neut. material (ENM)	Effective magnesium (EM)	lbs/a
785	0	

RETEST OFTEN

Messages:

TO DETERMINE LIMESTONE NEED IN TONS/ACRE, DIVIDE YOUR ENM REQUIREMENT BY THE GUARANTEE OF YOUR LIMESTONE DEALER.

WHEN N REQUIREMENT FOR COOL SEASON GRASS EXCEEDS 90 POUNDS PER ACRE, APPLY TWO-THIRDS IN THE PERIOD DECEMBER THROUGH FEBRUARY AND THE REMAINDER IN AUGUST.

Area Agronomy Specialist ____________ Phone ____________ ____________
Signature

MP 189 (rev. 9/82)

University of Missouri, Lincoln University, U.S. Department of Agriculture & Local University Extension Councils Cooperating

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White - Farmer Yellow - Extension
Blue - Firm Pink - ASCS

TM 2.1

FM 7531
Farm Mgt. Extension
Univ. of Missouri

Form 1
FARM MAP

Present System____
Alternative no.____

Scale: 1 square = 10 acres

Note: See HO 1 for mapping symbols.

Source: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

AS 2.1

Manager Self-Evaluation

While no precise yardstick is available for measuring management ability, the manager may initiate some self-evaluation by asking himself specific management questions such as the

YES	NO	
☐	☐	By Feb. 15, have I decided what crops to plant in each field and figured seed, fertilizer, and other requirements for each crop?
☐	☐	In determining the above requirements, have I consulted previous years' crop records, Experiment Station figures, or some other reliable source in the process of arriving at a decision?
☐	☐	After reaching decisions, do I act promptly in placing orders so that materials are on hand when needed?
☐	☐	Before spring work starts, do I set a schedule when work is to be completed such as plowing, disking, and planting?
☐	☐	Unless delayed by unusual weather conditions, do I plant and harvest at the most favorable times?
☐	☐	Do I conduct some field trials of yields from different rates and analyses of fertilizer, and different kinds of hybrid seed?
☐	☐	Before putting machines away for the winter, do I make a written record of inspection, repairs, and maintenance needed before the next crop season?
☐	☐	Do I get necessary machinery inspections, repairs, and maintenance done before the cropping season opens?
☐	☐	Do I schedule farrowing and calving dates so these operations interfere very little with cropping operations?
☐	☐	Do I follow definite schedules for vaccinating, castrating, dehorning, and other essential livestock practices?
☐	☐	When buying farm supplies, or when selling farm products, do I check prices at two or more places?
☐	☐	Do I know my feed and pasture costs per 100 pounds of beef, pork, or milk?
☐	☐	Do I, at least once a year, make out a net worth statement to measure financial progress?
☐	☐	Do I, at the end of the year, make out an operating statement which shows net farm income for the past year?

SOURCE: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

UNIT III - PLANNING THE FARM BUSINESS

Lesson 3: Planning a Profitable Cropping System

Objective: The student will be able to explain and demonstrate the principles of planning a cropping system.

Study Questions

1. **What factors should be considered in planning a cropping system?**
2. **Why should the cropping system be determined before the livestock system?**
3. **What are Missouri's highest cash-value crops?**
4. **What determines the most profitable cropping system?**

Student References

1. Missouri Farm Planning Handbook (Manual 75). University of Missouri-Columbia: College of Agriculture-Extension Division, 1986.
    - a) Form 2 - Land Use Classification
    - b) Form 4 - Sample Case Farm Cropping System
2. Handout
    - a) HO 3.1: Cash Receipts for Missouri's Highest Value Crops

Teacher Reference

1. Missouri Farm Facts. Columbia: Missouri Agricultural Statistics Office, Missouri Department of Agriculture, 1986.

UNIT III - PLANNING THE FARM BUSINESS

Lesson 3: Planning a Profitable Cropping System

TEACHING PROCEDURES

A. Review

Review the previous lesson. Students will need to use the forms completed in the last lesson as a basis for planning a profitable cropping system.

B. Motivation

Review the current cropping system of the case farm with students. Ask students what changes they would make to increase the amount of profit. It should be important to note that in some years it may be very difficult to make a profit. With this in mind, students should be ready to complete this lesson.

C. Assignment

D. Supervised study

E. Discussion

Q1. **What factors should be considered in planning a cropping system?**

A1. 1) **Evaluation of the land**
2) **Classification of land**

Discuss factors to be considered before a cropping system is planned and point out that over a period of years, farm income is closely related to the use of land and to the kind and volume of crops produced. Land is the basic fixed resource and the primary source of income, even though livestock is used to market this production.

Q2. **Why should the cropping system be determined before the livestock system?**

A2. 1) **Livestock system is more flexible.**
2) **Livestock that is suited to a cropping system can be selected after the cropping system is established.**
3) **A cropping system cannot always be made to fit a livestock system.**
   a) **Soil restrictions**
   b) **Climate restrictions**
4) **Net farm income may be increased.**

Discuss with students thoroughly. Emphasize that livestock systems are more flexible than cropping systems. A livestock system can be chosen to be compatible with a cropping system, but the reverse is not as frequently true. Cropping systems are not always well adapted to pre-established livestock systems.

Q3. **What are Missouri's highest cash-value crops?**

A3.

Missouri's Highest Cash Value Crops (Thousands of Dollars)

Type of Crop	1981	1982	1983	1984	1985
Soybeans	$ 896,106	$ 961,884	$ 857,924	$ 763,266	$ 677,524
Wheat	349,253	292,920	230,155	325,633	168,325
Corn	256,720	218,698	225,295	175,737	440,088
Cotton	66,309	85,668	15,550	46,514	76,349
Sorghum	78,539	79,858	51,265	75,211	164,095
Other Crops	179,003	139,118	126,730	175,988	212,076
Total Crops	$1,820,930	$1,778,146	$1,506,919	$1,562,349	$1,738,457

Credit: 1986 Missouri Farm Facts

Ask students to suggest Missouri's highest legal cash crops and list them on the board.

Q4. **What determines the most profitable cropping system?**

A4.
1) **Acreages in various classes of land**
2) **Probable net returns from each crop**
3) **Distribution of labor during the year**

List these factors on the board and discuss them. Pass out a copy of Form 4 from Manual 75. Have students complete this form based on the answer sheet provided or what would be applicable to the local area.

NOTE: After the principles of crop planning are understood, students are ready to start revising the cropping system. One revision of the sample case farm is included. Have adequate copies of Form 4 available so students can try different solutions.

Before starting on the revision of the cropping system, the teacher and students should agree on each of the crop budgets in section II of Manual 75. If none of the suggested yields seem practical for the case farm, complete the "My Farm" column and use the present marketing situation.

Form 2 should be revised to show the changes in the cropping system. Students' ideas may vary on the potential land use, but students should come to an agreement. The instructor will need to check these individually in class and make the final decision if there is disagreement among the students.

Students should complete Form 4 for an example other than the case farm. After two or three students have completed a trial run, have them tell the entire class their figures in column 7, line 20 on Form 4. Usually some will be higher, and the rest will want to know how the higher figures were achieved. At this point, some will want to take their work home at night and revise it again.

Before moving from this lesson, revise the farm map for the case farm. Indicate a new field layout and, if rotations are used, indicate how these will work. Frequently high school students don't understand the mechanics of a rotation.

Call attention to the improvement in crop income on the revised plan over the present situation. Be careful not to criticize the management practices of the present farmer. The present farmer may have an alternate source of income such as social security or savings. However, someone just beginning with heavy debt loads must be more concerned about making a profit.

F. Other activities

Have adequate copies of Form 4 available so students can try different solutions.

G. Conclusion

In planning a cropping system, one must determine the land characteristics, decide on the most profitable cropping system, and adapt livestock enterprises to the cropping system.

H. Competency

Explain the principles of planning a cropping system and be able to revise the cropping system of the case farm.

I. Answers to Evaluation

The instructor can use the written evaluation, use the revised cropping system as an evaluation, or use both.

1. a. Evaluation of land
    b. Classification of land
2. a. Acreage in various classes of land
    b. Probable net returns from each crop
    c. Distribution of labor during the year
3. a
4. d

J. Answers to Manual 75 forms

Form 4 - Answers on the following page.

FM 7534
Farm Mgt. Ext.
Univ. of Mo.

FORM 4
SUMMARY: CROPPING SYSTEM

Present Plan____
Alternative No. 1

	Crop & land use	Total acres[1]	PER ACRE BUDGETS			BUDGET TOTALS			FARM FEED PRODUCTION			
			Avg. yield	Income over variable costs	Hours direct labor	Production	Income over variable costs	Hours direct labor	Corn equivalent[2]	Silage tons	Hay tons	Pasture AUM's[3]
	(1)	(2)	(3)	(4)	(5)	(6) 2x3	(7) 2x4	(8) 2x5	(9)	(10)	(11)	(12)
1	Corn-Field A	40	80	87	3.5	3,200	3,480	140	3,200			
2	Mixed Grass & Hay	36	2.5	55	6.0	90	1,980	216			90	
3	Wheat (BCDGHF)	45	40	74	1.5	1,800	3,330	67.5	1980			
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17	TOTAL CROP ACRES	121										
18	Farmstead	17										
19	Idle land	47										
20	TOTALS	185					8,790	423.5	5,180		90	

III-40

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[1] When land is double cropped, list first and second crops separately. Circle acreage of second crop and do not add circled figures in Col. 2.

[2] To calculate corn equivalent bushels, multiply feed grain yield in Column 6 by C.E. factor (corn = 1.0, grain sorghum = .95, barley = .77, and oats = .50).

[3] AUM = animal unit month.

SOURCE: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

UNIT III - PLANNING THE FARM BUSINESS Name ______________

Lesson 3: Planning a Profitable Cropping System Date ______________

EVALUATION

Complete the following short answer questions.

1. What two things must be done before the cropping system is planned?

   a.

   b.

2. Identify three factors used to determine the most profitable cropping system.

   a.

   b.

   c.

Circle the letter that corresponds to the best answer.

3. Which of these statements is correct?

   a. The livestock system should be planned around the cropping system.
   b. The cropping system should be planned around the livestock system.
   c. The livestock and cropping systems should be selected independently of each other.
   d. None of the above

4. Which of the following is not a high cash-value crop in Missouri?

   a. Corn
   b. Wheat
   c. Soybeans
   d. Rice

HO 3.1

Cash Receipts for Missouri's Highest Value Crops

Table 1

Missouri's Highest Cash Value Crops (Thousands of Dollars)

Type of Crop	1981	1982	1983	1984	1985
Soybeans	$ 896,106	$ 961,884	$ 857,924	$ 763,266	$ 677,524
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Other Crops	179,003	139,118	126,730	175,988	212,076
Total Crops	$1,820,930	$1,778,146	$1,506,919	$1,562,349	$1,738,457

Table I is a listing of Missouri's highest cash value crops from 1981 through 1985. Although the value changes from year to year, the ranking is fairly constant. Occasionally there will be a significant change in ranking such as in 1985. This table can be updated annually with Missouri Farm Facts.

UNIT III - PLANNING THE FARM BUSINESS

Lesson 4: Determining Machinery Needs

Objective: The student will be able to calculate machinery needs.

Study Questions

1. **What is effective field capacity?**
2. **What is the formula for effective field capacity, and how is it determined?**
3. **What is timeliness, and how does it affect yield?**
4. **What is the trade-off between machine costs and timeliness?**
5. **How is the number of days and hours available for fieldwork during each season determined?**
6. **How is implement size determined?**
7. **How is the size of tractor needed for a farm business determined?**
8. **How is total per-acre cost for an implement determined?**
9. **What are the average custom rates for combining soybeans, square baling, and round baling?**
10. **How much would be charged for a job if it is done as custom work?**

Student References

1. Missouri Farm Planning Handbook (Manual 75). University of Missouri-Columbia: College of Agriculture-Extension Division, 1986.
2. University of Missouri-Columbia Extension Division agricultural publications
    - a) G0 0302: 1985 Custom Rates for Farm Services in Missouri
    - b) G0 1200: Machinery Management I - Field Machine Capacity
    - c) G0 1201: Machinery Management II - Timeliness
    - d) G0 1204: Machinery Management V - Power Requirement
3. Handouts
    - a) HO 4.1: Hourly Repair Cost per $1,000 of List Price for Some Farm Machines
    - b) HO 4.2: Annual Fixed Costs in Percent of List Price by Machine Category and Age

4. Assignment Sheet

   a) AS 4.1: Determining Total Costs of a Tillage Operation

Teacher Reference

1. Finner, Marshall F. Farm Machinery Fundamentals. Madison, WI: American Publishing Company, 1978.

UNIT III - PLANNING THE FARM BUSINESS

Lesson 4: Determining Machinery Needs

TEACHING PROCEDURES

A. Review

B. Motivation

Ask two students to list the machinery owned at home with its approximate value and the number of acres this machinery is used on. Figure the students' investment per crop acre. Discuss briefly the timeliness and labor required of the machinery the two students have listed. Have students suggest some ideas on how to reduce machinery costs, such as using custom work or doing custom work.

C. Assignment

D. Supervised study

E. Discussion

Q1. What is effective field capacity?

A1. 1) It is the theoretical capacity multiplied by the field efficiency.

2) Theoretical capacity is what could be accomplished if a machine was in use 100 percent of time. The field efficiency factor was originally calculated by dividing the sum of all time periods (travelling to and from the field, opening and closing gates, refueling, rest stops, actual work, etc.) by the time actually spent working. Estimates of field efficiency can be found on UMC Guide 1200. These are only estimates and may vary between farms.

3) Effective field capacity is the amount of work that can be accomplished in a given time period.

4) It is affected by the following factors.
  - **a) Overlapping**
  - **b) Filling seed hoppers**
  - **c) Crop interference**
  - **d) Turning**
  - **e) Personal operator time**
  - **f) Machine adjustments**
  - **g) Mechanical failure**

Discuss effective field capacity and why it is used to determine actual work accomplished. Distribute copies of UMC Guide 1200.

Q2. What is the formula for effective field capacity, and how is it determined?

A2. 1) $\frac{S \times W \times fe}{8.25} = EFC$

S = Speed of machine (mi./hr.)
W = Width of strip (ft.)
fe = field efficiency
EFC = Effective Field Capacity (acres/hr.)

2) EXAMPLE: A farmer has a 3-16 inch plow that he operates at 4 mph and 80 percent efficiency.

$$\frac{4 \text{ mph} \times 4 \times .80}{8.25} = \frac{12.8}{8.25} = 1.55 \text{ acres/hr.}$$

The constant factor of 8.25 is derived by dividing the number of square feet in an acre (43,560) by the number of feet in a mile (5,280). (43,560 / 5,280 = 8.25) The effective field capacity equation is for use with customary units such as acres/hour, miles/hour, and feet. To use metric units such as hectares/hour, kilometers/hour, and meters use the constant factor of 10. This constant is derived by dividing the number of square meters in a hectare (10,000) by the number of meters in a kilometer (1,000); thus, 10,000 / 1,000 = 10.

List the formula on the board. Discuss factors that affect field efficiency: turning time, time spent filling planter boxes, and maintenance time.

Discuss how increasing implement width increases field capacity more uniformly than increasing speed. This is because many farming activities require a certain speed for optimum performance. For example, disking at too slow a speed will not turn enough soil, but going too fast will throw the soil too far. This results in poor seedbed preparation.

Q3. What is timeliness, and how does it affect yield?

A3. 1) Timeliness is a measure of the ability to perform a job at the time that maximizes profits.
2) Timeliness affects yield in the following ways:
   a) Yield loss from delay of planting
   b) Yield loss from delay of optimum harvesting time

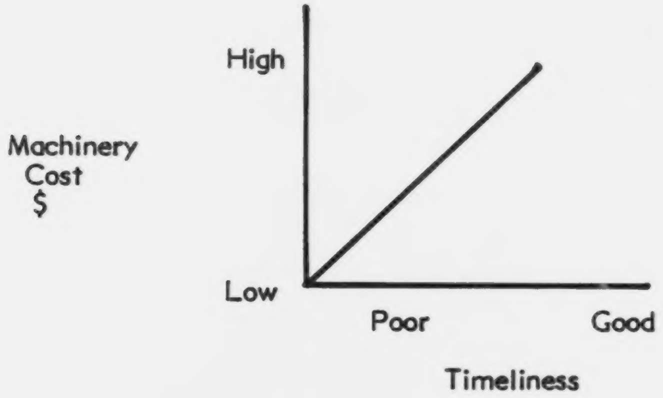
Distribute copies of UMC Guide 1201. Use this guide to develop a discussion on the importance of timeliness.

Q4. What is the trade-off between machine costs and timeliness?

A4. 1) As a general rule, the ability to maximize use of time is increased by using bigger machines. This is because larger machines increase effective capacity.
2) To gain timeliness one must usually give up money.

3) **Timeliness is the primary factor that causes producers machinery costs to be high.**

Use the graph below to facilitate the discussion of timeliness versus machinery costs. A compromise must be worked out between the two. UMC Guide 1201 shows the importance of timeliness as it relates to yields.



Q5. **How is the number of days and hours available for fieldwork during each season determined?**

A5.
1) **Determine number of calendar days available.**
2) **Subtract any Sundays or other days that will not be available for work. These are optional days.**
3) **Multiply by .33 if before May 1 or after September 30.**
4) **Multiply by .5 if between May 1 and September 30.**
5) **Multiply by number of hours spent in field per day and allow enough time for other necessary activities.**

(Cal. days - opt. days) x % days usable x hours usable per day

Work an example on the board on how to determine the time available for field work. The example should be typical for the home farms of the students. The following example demonstrates the steps. Point out that time can be varied by working longer hours, using hourly hired labor as an example.
NOTE: The guidelines listed above are based on average weather conditions in Missouri. The actual amount of time will fluctuate from year to year.
EXAMPLE: If a farmer wants to spring plow 80 acres for corn, he can start March 22 on an average. He would like to finish by April 14 to start disKing and planting.

1) Calendar days available = 24 days
2) Sundays = 3
3) Days for working = 21
4) Good working days = 21 x .33 = 7
5) Hours per day = 8
6) Hours available = 56

Q6. How is implement size determined?

A6.
1) Determine number of acres to be worked.
2) Determine amount of time available by using steps in Question 5.
3) Divide acres to be worked by hours available to determine acres per hour needed.

$$\frac{\text{acres to be worked}}{\text{hours available}} = \text{acres per hour needed}$$

4) Calculate equipment size

$$\frac{8.25 \times \text{acres per hour}}{\text{miles per hour} \times \text{field efficiency}} = \text{width of equipment reach}$$

Using the hours available from Question 5, determine the size of implement needed. The procedure in this question can be used to carry the example in Question 5 through this step. Discuss why an efficiency factor is included. Distribute a copy of UMC Guide 1204 to use in answering this question. Use the amount of time available in Question 5 to determine the size of implement needed.

NOTE: This formula is just a rearrangement of the formula for effective field capacity. Variables and the constant 8.25 have the same meaning. Review Question 2 if there is a problem in determining the purpose of the variables or the constant of 8.25.

$$\frac{8.25 \times EFC}{s \times fe} = w$$

s = speed of machine (mi./hr.)
w = width of strip (mi./.hr.)
fe = field efficiency
EFC = Effective Field Capacity (acres/hr.)

Q7. How is the size of a tractor needed for a farm business determined?

A7.
1) Determine the implement with the largest power requirement that will be used with that tractor.
2) Match the power requirement to the tractor size needed. The highest tractor horsepower requirement on a farm is usually primary tillage.

Use UMC Guide 1204 to determine the size of tractor needed. It is suggested that the tractor size be based on the same implement used in the previous question. Discuss with the students how it may be profitable to have an additional smaller tractor to do activities requiring less power, such as raking hay. The smaller tractor would also be sized by comparing the power requirement of the heaviest implement it would be used with.

Q8. How is total per-acre cost for an implement determined?

A8. 1) Hourly costs for tractor

a) Hourly fixed cost formula

$$\frac{\text{list price} \times \text{\% of list price}}{\text{annual hours used}} = \text{hourly fixed cost}$$

NOTE: Determine list price from Table C 11 in Manual 75 or use local dealership price. Determine percent of list price from HO 4.2. Use list price for year of ownership. In planning long range budgets, use average percent of list price for the number of years the item will be used.

b) Hourly repair cost formula

$$\frac{\text{list price} \times \text{repair rate}}{\text{1000 hours}} = \text{hourly repair costs}$$

NOTE: Determine repair rates from HO 4.1. The repair rate is based on $1,000 of list price.

c) Hourly fuel cost formula

maximum PTO x D x fuel price = hourly fuel cost

PTO = Power takeoff rating of tractor
D = hourly fuel consumption constant
= .044 for diesel or .060 for gas

d) Hourly lubrication cost formula

fuel cost per hour x 15% = hourly lubrication cost

e) Total hourly costs = hourly fixed cost + hourly repair cost + hourly fuel costs + hourly lubrication costs

2) Hourly cost for plow

a) Hourly fixed cost formula with same procedure as for tractor
b) Hourly repair cost formula with same procedure as for tractor
c) Total hourly costs = hourly fixed costs x hourly repair costs

3) Total hourly cost of tractor and plow = total hourly cost of tractor + total hourly cost of plow + total hourly labor cost

4) Cost per acre of land

$$\frac{\text{Cost of tractor and plow per hour}}{\text{effective field capacity}} = \text{cost per acre of land}$$

Have the students work through AS 4.1. Discuss how this assignment can be used to calculate the total costs of owning and operating an implement. Point out that a reasonable charge should be included for labor. This cost is important in determining crop budgets and the feasibility of doing custom work. Distribute copies of HO 4.1 and 4.2 to be used with this problem. Refer to Table C-11 in Manual 75 for list prices.

Q9. What are the average custom rates for combining soybeans, square baling, and round baling?

A9. 1) **Combining soybeans - $20 per acre or $.60 per bushel**
2) **Square baling - $.30 per bale**
3) **Round baling - under 1,000 pound; $5 per bale**
- over 1,000 pound; $6 per bale

Use UMC Guide 0302 to determine average rates for custom work. Have them look up additional examples that might be common in the local area.

Q10. How much would be charged for a job if it is done as custom work?

A10. 1) **Anything above variable costs can be used to offset some of the fixed costs.**
2) **In the long run all costs must be covered.**
3) **Increasing the number of acres will reduce the fixed cost per acre.**
4) **Use the procedure outlined in Question 8 to determine the break even rate.**

The amount charged for doing custom work depends on several factors. Full-time farmers who have extra time available might do some custom work in addition to their own operations to reduce fixed cost per acre. Someone completely in the business of doing custom work will need to cover a larger share of total costs each year to stay in operation. In the short run, both will operate as long as they can cover their variable costs. Use UMC Guide 0302 as a reference.

NOTE: If students hire custom work, they increase their machine costs on crop budgets but reduce their own labor needed. About 25 percent of the custom rate is usually a labor charge.

If a student does custom work, it is included as income, but it also increases the costs for machinery and uses labor.

$$\frac{\text{Fixed costs per year}}{\text{Custom rate - operating costs}} = \text{Number of acres needed to break even on owning a machine}$$

F. Other activities

Have students compare their investments per crop acre and their total costs. Many will want to revise their machinery needs.

G. Conclusion

Since a farm's financial resources are limited, the farm business manager must make the most time-wise and cost-efficient choices possible when determining machinery needs. To make the right decisions, farm business managers must figure in advance of the purchase whether they should own machinery or have custom operators perform needed farming activities. The decision will depend on the amount of work to be done and the trade-off between timeliness and costs.

H. Competency

Calculate machinery needs.

I. Answers to Evaluation

1. c
2. b
3. c
4. d
5. d
6. $\frac{6 \times 5 \times .80}{8.25} = 2.91$ acres/hour

J. Answers to AS 4.1

See the following page.

DETERMINING TOTAL COSTS OF A TILLAGE OPERATION

Use Manual 75 for Tables C12 and C13.

Item Description - Tractor

1. Type of tractor 50 Hp Diesel
2. List price (Table C-13) $16,000.00
3. Percent of list price (HO 4.1) 13.2%
4. Annual fixed cost
   line 2 x line 3 $2,112.00
5. Annual hours used 750 hrs
6. Hourly fixed costs
   line 4 / line 5 $2.82

7. List price (line 2) $16,000.00
8. Repair rate (HO 4.2) .075
9. Repair costs per hour
   (line 7 x line 8) / $1,000 $1.20

10. Maximum PTO power of tractor 50 Hp
11. Constant (0.044 for diesel or 0.006 for gas) .044
12. Fuel price per gallon $1.00
13. Fuel cost per hour
    line 10 x line 11 x line 12 $2.20

14. Fuel costs per hour (line 13) $2.20
15. Lubrication cost/hour
    line 14 x 15% $0.33

A. Total hourly tractor cost
   line 6 + line 9 + line 13 + line 15 $6.55

Item Description - Tillage Implement

1. Type of tillage implement 3-16' Plow
2. List price Table C-12 $3,000.00
3. Percent of list price (HO 4.1) 13.1%
4. Annual fixed costs
line 2 x line 3 $393.00
5. Annual hours used 150 hrs
6. Hourly fixed costs
line 4 / line 5 $2.62

7. List price (line 2) $3,000.00
8. Repair rate (HO 4.2) .42
9. Repair costs per hour
(line 7 x line 8) / $1,000 $1.26

B. Total hourly costs for tillage implement
line 6 + line 9 $3.88

Total Cost Per Hour for Tillage Operation

1. Total hourly cost for tractor (line A) $6.55
2. Total hourly cost for tillage implement $3.88
3. Labor costs per hour (line B) $5.00
4. Total cost per hour
line 1 + line 2 + line 3 $15.43

Effective Field Capacity Acres/Hour

1. Speed of tractor in mph 5
2. Width of strip (feet) 4 Ft.
3. Field efficiency of implement from
Table C-12 Manual 75 .81
4. Effective field capacity acres/hour
(line 1 x line 2 x line 3) / 8.25 1.96 Acres/HR.

UNIT III - PLANNING THE FARM BUSINESS

Lesson 4: Determining Machinery Needs

Name ______________

Date ______________

EVALUATION

Circle the letter that corresponds to the best answer.

1. Timeliness is a measure of the ability to perform a job at the time that maximizes ______________.

   a. Expenses
   b. Machinery
   c. Profits
   d. Time
   e. Interest

2. What is the primary factor that causes machine costs to be high?

   a. Machine capacity
   b. Timeliness
   c. Attachments
   d. Field efficiency

3. Which of the following formulas is used to figure the amount of time available for field work?

   a. Number of calendar days available
   x hours of work per day
   b. Number of calendar days available
   - Sundays (optional)
   x hours of work per day
   c. Number of calendar days available
   - Sundays or other days not available for work
   x hours of work per day
   x .33 if before May 1 or after September 30
   or x .5 if between May 1 and September 30
   d. Harvest date wanted
   - (days in growing season + days in planting season)
   x % of days usable x hours usable per day.

4. Which of the following factors is not used to determine the size of implement needed?

   a. Number of acres to be worked
   b. Amount of time available
   c. Travel speed of tractor
   d. Cost of implement

5. The most demanding tractor horsepower requirement on a farm is usually ________________.

  a. Square baling
  b. Secondary tillage
  c. Hay conditioning
  d. Primary tillage

Complete the following short answer question.

6. Anne has 100 acres to plant. She will do her primary tillage with a chisel plow. Her operating speed is 5 mph. The chisel plow is 6 feet wide. The field efficiency of the chisel plow is 80 percent. What is the effective field capacity?

HO 4.1

HOURLY REPAIR COST PER $1,000 OF LIST PRICE FOR SOME FARM MACHINES*

Machines	Hours Per Year	7-Year Period	10-Year Period	15-Year Period
Two-wheel drive tractor	200	$0.03	$0.04	$0.05
	400	0.05	0.06	0.07
	600	0.06	0.07	0.09
	800	0.07	0.08	0.10
Four-wheel drive tractor	200	0.03	0.03	0.04
	400	0.04	0.05	0.06
	600	0.05	0.06	0.07
	800	0.06	0.07	0.08
Wagons and Boxes	50	0.07	0.08	0.08
	100	0.09	0.11	0.12
	150	0.11	0.12	0.14
	200	0.12	0.14	0.16
PTO Forage Harvester, Corn Picker, Farm Truck, Self propelled windrower, Self propelled sprayer	50	0.20	0.23	0.27
	100	0.26	0.30	0.36
	150	0.31	0.36	0.42
	200	0.35	0.40	**
PTO Baler	50	0.15	0.17	0.20
	100	0.20	0.22	0.26
	150	0.23	0.26	0.31
	200	0.26	0.29	**
Planting equipment, Sprayer PTO type	50	0.51	0.59	0.69
	100	0.67	0.78	**
	150	0.79	0.91	**
	200	0.89	**	**
Self propelled combine, Self propelled forage harvester, Manure spreader	50	0.15	0.17	0.20
	100	0.20	0.23	0.27
	150	0.23	0.26	0.31
	200	0.26	0.30	**
Plows & tillage equipment	50	0.27	0.30	0.33
	100	0.33	0.36	0.41
	150	0.38	0.42	0.46
	200	0.40	0.45	**
Fertilizer equipment	50	0.61	0.70	0.83
	100	0.80	0.92	**
	150	0.95	1.08	**
	200	1.06	**	**
Mower, Mower-conditioner-windrower	50	0.36	0.40	0.68
	100	0.44	0.49	0.83
	150	0.49	0.55	0.92
	200	0.54	0.60	**

*Derived from 1977 Agricultural Engineers Yearbook
**Exceeds estimated life in hours

Credit: Finner, Marshall F. Farm Machinery Fundamentals. Madison, WI: American Publishing Company, 1978.

ANNUAL FIXED COSTS IN PERCENT OF LIST PRICE BY MACHINE CATEGORY AND AGE

	EQUIPMENT CATEGORIES			
Age of Equipment (Year)	I Wheel Tractors, Stat. Power Units	II Combines, S.P. Windrowers	III Tillage, Planting, Corn Heads, etc.	IV Forage Harvesters, Balers, etc.
	PERCENT OF LIST PRICE			
1	49.4	55.4	58.9	62.4
2	12.5	13.3	12.5	11.7
3	11.5	11.7	11.0	10.4
4	10.7	10.4	9.8	9.1
5	9.7	9.3	8.6	8.1
6	9.0	8.2	7.7	7.0
7	8.2	7.2	6.8	6.3
8	7.5	6.4	6.0	5.6
9	7.0	5.7	5.3	5.0
10	6.5	5.0	4.7	4.3
11	5.8	4.5	4.1	3.9
12	5.5	3.9	3.7	3.5
13	5.0	3.5	3.3	3.0
14	4.6	3.1	3.0	2.7
15	4.2	2.8	2.5	2.3
Ave. for 7 Year Life	15.9	16.5	16.5	16.4
Ave. for 10 Year Life	13.2	13.3	13.1	13.0
Ave. for 15 Year Life	10.5	10.0	9.9	9.7

Table 17.3 has been developed to facilitate determining annual fixed costs. Depreciation was based on the decline in market value. An annual charge of eight percent for interest, two percent for taxes, one and one-half percent for housing and one-half percent for insurance were also included. These rates were all figured on the remaining value of equipment.

Average annual costs were also calculated for seven, ten and fifteen year lives for the different equipment categories.

To determine the annual fixed costs during the fourth year of a tractor which originally cost $10,000, Table 17.3 indicates a charge of 10.7 percent. Thus, 10.7 percent x $10,000 = $1,070.00.

However, if it is expected that the tractor will be owned for seven years, the average annual fixed cost for each of the seven years will be 15.9 percent x $10,000 = $1,590.00.

To determine the fixed costs on a time basis, the annual fixed costs may be divided by the annual hours of use. To determine the fixed costs on a land use basis, divide by the number of hectares [acres] of land on which the machine is operated during the year.

VARIABLE COSTS

Variable costs include items which vary directly with the hours of annual use of a machine. These costs include repairs, fuel and labor.

Credit: Finner, Marshall F. Farm Machinery Fundamentals. Madison, WI: American Publishing Company, 1978.

AS 4.1

DETERMINING TOTAL COSTS OF A TILLAGE OPERATION

Use Manual 75 for Tables C12 and C13

Item Description - Tractor

1. Type of tractor
2. List price (Table C-13)
3. Percent of list price (HO 4.1)
4. Annual fixed cost
   line 2 x line 3
5. Annual hours used
6. Hourly fixed costs
   line 4 - line 5

---

7. List price (line 2)
8. Repair rate (HO 4.2)
9. Repair costs per hour
   line 7 x (line 8 - $1,000)

---

10. Maximum PTO power of tractor
11. Constant (0.044 for diesel or 0.006
    for gas)
12. Fuel price per gallon
13. Fuel cost per hour
    line 10 x line 11 x line 12

---

14. Fuel costs per hour (line 13)
15. Lubrication cost/hour
    line 13 x 15%

---

16. Total hourly tractor cost
    line 6 + line 9 + line 13 + line 15

Item Description - Tillage Implement

1. Type of tillage implement
2. List price Table C-12
3. Percent of list price (HO 4.1)
4. Annual fixed costs
   line 2 x line 3
5. Annual hours used
6. Hourly fixed costs
   line 4 - line 5

---

7. List price (line 2)
8. Repair rate (HO 4.2)
9. Repair costs per hour
line 7 x line 8 - $1,000

12. Total hourly costs for tillage implement
line 6 + line 9

Total Cost Per Hour for Tillage Operation

1. Total hourly cost for tractor
2. Total hourly cost for tillage implement
3. Labor costs per hour
4. Total cost per hour
line 1 + line 2 + line 3

5. Speed of tractor in mph
6. Width of strip (feet)
7. Field efficiency of implement from
Table C-12 Manual 75
8. Effective field capacity acres/hour
(line 5 x line 6 x line 7) - 8.25

UNIT III - PLANNING THE FARM BUSINESS

Lesson 5: Planning a Profitable Livestock System

Objective: The student will be able to explain and demonstrate the principles of planning a profitable livestock system.

Study Questions

1. **What are three reasons for raising livestock?**
2. **What factors should be considered in selecting a livestock enterprise?**
3. **What are the major livestock enterprises found on Missouri farms in terms of annual sales?**
4. **What are some important characteristics of each enterprise?**

Student References

1. Missouri Farm Planning Handbook (Manual 75). University of Missouri-Columbia: College of Agriculture-Extension Division, 1986.
   a) Form 5 - Summary: Livestock System
2. University of Missouri-Columbia Extension Division agricultural publication
   a) G781: So You Want to Farm
3. Handouts
   a) HO 5.1: Value of Missouri Livestock Products
   b) HO 5.2: Important Characteristics of Various Enterprises

Teacher Reference

1. Missouri Farm Facts. Columbia: Missouri Agricultural Statistical Office, Missouri Department of Agriculture, 1986.

UNIT III - PLANNING THE FARM BUSINESS

Lesson 5: Planning a Profitable Livestock System

TEACHING PROCEDURES

A. Review

B. Motivation

Review the improvements made in the profit from the cropping system. Can the same improvement be made in the livestock system? Note that in some years it is extremely difficult to earn a profit. The goal in planning a profitable livestock enterprise should be to earn a reasonable profit in good years and reduce losses as much as possible in poor years.

C. Assignment

D. Supervised study

E. Discussion

Q1. What are three reasons for raising livestock?

A1.
1) **Marketing crops through livestock sometimes yields higher returns than could be obtained if the crops were sold.**
2) **Livestock enterprises keep year-round farm labor fully and profitably employed throughout the year.**
3) **Livestock provides a market for pasture and other crop by-products that otherwise could not be marketed.**

List the three reasons on the board as students suggest them. Discuss each one as it is listed.

Q2. What factors should be considered in selecting a livestock enterprise?

A2.
1) **Amount of grain and forage produced in the cropping system**
2) **Regularity and stability of net income**
3) **Amount of labor available**
4) **Distribution of labor requirements**
5) **Skill and personal preferences of the manager**
6) **Available markets**
7) **Capital requirement and rate of capital turnover**

List the factors on the board as students suggest them. Discuss examples of each factor as it is listed.

Q3. What are the major livestock enterprises found on Missouri farms in terms of annual sales?

A3.	1)	**Beef cattle**	**$775,374,000**
	2)	**Hogs**	**$574,873,000**
	3)	**Dairy**	**$358,750,000**

4) Poultry

a)	Turkeys	$106,700,000
b)	Eggs	$ 48,411,000
c)	Chickens	$ 4,160,000

Missouri has approximately $1.9 billion of livestock sales annually. These sales contribute a significant amount to the total production in agriculture. These figures do not include the cost of production. Their order of importance in terms of sales is listed above. Discuss these amounts with the students. Have them find these amounts on HO 5.1. These figures can be adjusted on an annual basis with Missouri Farm Facts.

Q4. **What are some important characteristics of each enterprise?**

A4.	Labor per unit	Capital per unit	Capital turnover per unit	Feed requirement per unit
Beef cattle	Low to Medium	High	Low	Medium to High
Dairy	High	High	Medium	High
Turkey	Low	Medium to Low	High	Low
Chicken	Low	Medium to Low	High	Low
Eggs	Low	Medium to Low	High	Low
Hogs	Medium to Low	Low to Medium	Medium to High	Medium

Discuss the labor, capital, and feed requirements for each of the major livestock enterprises. (HO 5.2)

Discuss UMC Guide G781.

Complete an alternative livestock system using Form 5 in Manual 75.

NOTE: Discuss this example to illustrate that one reason for keeping livestock is to market crops at a higher return through livestock. Ask class members how many bushels of corn are available on their revised crop plans in Form 4, column 9, line 20 from Lesson 3, and how many purchased feeder pigs bought at 50 pounds could be fed out with this much corn. Use similar comparisons through this lesson so students can pick up ideas on how to select livestock.

The question of added facilities will come up because of adding or changing livestock enterprises and numbers. Look at Tables L-35 through L-43 in section III of Manual 75 for the amount of space needed and estimated costs. Remind students again of limited capital (150 percent of present) and that they will have to make choices on machinery, buildings, livestock, etc.

After one or two students have made some progress, stop the class and let them tell what they are trying and how it is working.

F. Other activities

1. After students are finished with Form 5, let them start revising the farmstead layout with the new buildings and facilities they will need. Suggestions are also in section IV of Manual 75.

2. Be sure everyone knows how much profit each student made on livestock. The students will be competitive in trying to outdo each other.

3. Have several copies of Form 5 available so students can try different alternatives.

G. Conclusion

To choose the most profitable livestock system, one must carefully examine the farm's present situation and the unique factors associated with each livestock enterprise.

H. Competency

Plan a profitable livestock system.

I. Answers to Evaluation

1. d
2. b
3. d
4. a. To market crops through livestock
   b. To use surplus labor throughout the year
   c. To market pasture and crop by-products

J. Answers to Manual 75 forms

Form 5

The answers provided are examples only. The instructor will need to determine if students' revised systems are acceptable.

FM 7535
Farm Mgt. Ext.
Univ. of Mo.

FORM 5
SUMMARY: LIVESTOCK SYSTEM

Present Plan ____
Alternative No. I

	Livestock unit	Total units	PER UNIT BUDGETS		PER UNIT FARM FEED REQUIREMENTS				BUDGET TOTALS		TOTAL FARM FEED REQUIREMENTS			
			Income over var. costs	Hours direct labor	Corn equivalent	Silage tons	Hay tons	Pasture AUM's	Income over variable costs	Hours direct labor	Corn equivalent	Silage tons	Hay tons	Pasture AUM's
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9) 2x3	(10) 2x4	(11) 2x5	(12) 2x6	(13) 2x7	(14) 2x8
1	Sows & Mkt. Hogs	80	346	28	175				27,680	2,240	14,000			
2														
3														
4														
5														
6														
7	Total farm feed requirements (add Cols. 11, 12, 13, and 14)										14,000			
8	Total farm feed available (Form 4, Cols. 9, 10, 11, and 12)										5180			
9	Farm feed surplus (+) or shortage (-) (difference of Lines 7 and 8)										8820			
10	Total Income Over Variable Costs (add Col. 9)								27,680					
11	TOTAL HOURS DIRECT LABOR (add Col. 10)									2,240				
12	Adjustment of Income Over Variable Costs for Value of Surplus Pasture:													
13	If surplus pasture, multiply surplus ______ (Line 9, Col. 14) x $_____/AUM =													
14	ADJUSTED TOTAL INCOME OVER VARIABLE COSTS (subtract Line 13 from Line 10)								27,680					

SOURCE: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

UNIT III - PLANNING THE FARM BUSINESS

Name ______________

Lesson 5: Planning a Profitable Livestock System

Date ______________

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which of the following is not one of the seven factors to consider in selecting a livestock system?

   a. Amount of grain and forage
   b. Amount of available labor
   c. Available markets
   d. Size of family

2. Which of the following is a major livestock enterprise in Missouri?

   a. Horses
   b. Turkeys
   c. Ducks
   d. Goats

3. What is one important characteristic of a beef cow herd?

   a. Frequent capital turnover
   b. High facility investment
   c. High grain requirement
   d. Low labor requirement per unit

Complete the following short answer question.

4. Identify three reasons for raising livestock.

   a.

   b.

   c.

335

Value of Missouri Livestock Products

CATTLE AND CALVES: Production and Income, Missouri, 1981-85

Year	Production	Marketings	Price per 100 lbs Cattle	Price per 100 lbs Calves	Value of Production	Cash Receipts	Value of Home Consumption	Gross Income
	-thousand pounds-		-dollars-			-thousand dollars-		
1981	1,708,760	1,831,750	58.30	62.80	1,009,620	1,081,055	23,940	1,104,995
1982	1,581,030	1,522,485	56.50	58.80	898,831	865,003	24,406	889,409
1983	1,585,510	1,731,310	55.40	60.50	889,094	973,056	24,285	997,341
1984	1,432,765	1,682,130	53.50	58.50	778,285	912,962	22,766	935,728
1985	**1,402,655**	**1,402,110**	**52.00**	**61.70**	**752,434**	**753,840**	**21,534**	**775,374**

HOGS AND PIGS: Production and Income, Missouri, 1981-85

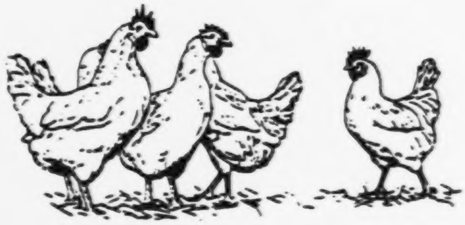
Year	Production	Marketings	Price per 100 Pounds	Value of Production	Cash Receipts	Value of Home Consumption	Gross Income
	-thousand pounds-		-dollars-		-thousand dollars-		
1981	1,380,913	1,433,185	43.20	607,242	629,982	10,433	640,415
1982	1,142,165	1,124,620	52.50	617,796	608,826	9,056	617,882
1983	1,390,830	1,368,820	46.70	662,787	652,721	6,445	659,166
1984	1,297,710	1,311,781	47.40	625,213	632,061	5,013	637,074
1985	**1,233,694**	**1,276,500**	**43.90**	**552,146**	**571,159**	**3,714**	**574,873**

MILK DISPOSITION, INCOME AND VALUE: Missouri, 1981-85

Year	Milk Used Where Produced Used For Milk, Cream and Butter	Milk Used Where Produced Fed to Calves	Milk Marketed by Producers Milk Marketed	Milk Marketed by Producers Price per Cwt.	Milk Marketed by Producers Cash Receipts	Gross Producer Income	Value of Milk Produced
	-million pounds-			-dollars-		-thousand dollars-	
1981	12	25	2,840	13.40	380,560	382,168	385,518
1982	12	29	2,864	13.30	380,912	382,508	386,365
1983	13	32	3,055	13.30	406,315	408,044	412,300
1984	14	60	2,680	13.20	353,760	355,608	363,528
1985	**14**	**43**	**2,813**	**12.50**	**351,625**	**353,375**	**358,750**

EGGS: Production and Value, Missouri, 1981-65

Year	Eggs Produced	Price Per Dozen	Value of Production
	-millions-	-cents-	-thous. dol.-
1981	1,448	54.0	65,160
1982	1,456	50.6	61,395
1983	1,352	49.3	55,544
1984	1,357	61.0	68,981
1985	**1,351**	**43.0**	**48,411**



CHICKENS: Lost, Sold, and Value of Sales, Missouri, 1981-1985 1/

Year	Number Lost 2/	Number Sold	Pounds Sold	Price Per Pound	Value of Sales
	-thousand head-		-thous lbs-	-thous dol-	-thous dol-
1981	1,100	5,200	34,320	11.0	3,775
1982	1,200	5,440	35,904	9.0	3,231
1983	1,200	5,740	37,884	11.0	4,167
1984	1,100	5,340	33,642	17.0	5,719
1985	**1,100**	**5,000**	**32,000**	**13.0**	**4,160**

1/ Estimates cover the 12 month period, December 1, previous year through November 30 and excludes broilers.

2/ Includes death and other losses during the 12 month period.

TURKEYS: Production and Value, Missouri, 1981-85

Year	Number Raised 1/	Pounds Produced 2/	Price Per Pound 3/	Value of Production
	-thous hd-	-thous lbs-	-cents-	-thous dol-
1981	12,000	226,800	37.0	83,916
1982	12,000	236,400	36.0	85,104
1983	13,000	250,900	38.0	95,342
1984	12,000	225,600	46.0	103,776
1985	**12,500**	**242,500**	**44.0**	**106,700**

1/ Based on turkeys placed Sep. 1, 1984 through Aug. 31, 1985. Exludes young turkeys lost.

2/ Includes home consumption.

3/ Live weight equivalent price.

Source: Missouri Farm Facts. Columbia, Missouri: Missouri Crop and Livestock Reporting Service, 1986.

HO 5.2

Important Characteristics of Various Enterprises

Enterprise	Labor needed	Capital needed	Capital turnover	Feed requirements
Beef Cattle	Low to Medium	High	Low	Medium to High
Dairy	High	High	Medium	High
Turkey	Low	Medium to Low	High	Low
Chicken	Low	Medium to Low	High	Low
Eggs	Low	Medium to Low	High	Low
Hogs	Medium to Low	Low to Medium	Medium to High	Medium

UNIT III - PLANNING THE FARM BUSINESS

Lesson 6: Determining Labor Needs and Uses

Objective: The student will be able to estimate the labor needs for a farm business.

Study Questions

1. **What are some general rules to improve labor efficiency?**
2. **What are some ways to reduce chore labor?**
3. **How are labor requirements for various crops determined?**
4. **How are labor requirements for various livestock enterprises determined?**
5. **What factors should be considered when hiring farm labor?**

Student References

1. Missouri Farm Planning Handbook (Manual 75). University of Missouri-Columbia: College of Agriculture-Extension Division, 1986.
    a) Form 6 - Summary: Capital, Labor, Income and Returns
2. University of Missouri-Columbia Extension Division agricultural publication
    a) G700: Managing Farm Labor
3. Handouts
    a) HO 6.1: Utilizing Farm Labor
    b) HO 6.2: Labor Requirements
4. Assignment Sheet
    a) AS 6.1: Example Labor Budget

Teacher Reference

1. Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.

UNIT III - PLANNING THE FARM BUSINESS

Lesson 6: Determining Labor Needs and Uses

TEACHING PROCEDURES

A. Review

Review the previous lesson.

B. Motivation

How many hours does a worker work per year? A good estimation is to take 365 days and subtract the Sundays (365 - 52), which equals 313 days. Subtract thirteen other days for holidays, which leaves approximately 300 days. Then, figure an eight-hour work day, which totals 2,400 hours per year. Next, as an example to determine labor needs, find out how many hours per year it takes to care for a sow her 2 litters and the facilities. If it takes 28 hours per sow per year and there are 2,400 labor hours available for the entire year, 85 sows can be effectively managed (2,400/28 = 85). Discuss why owning 100 sows or 20 sows would reduce efficiency, considering the above factors.

C. Assignment

D. Supervised study

E. Discussion

Q1. What are some general rules to improve labor efficiency?

A1. 1) **Avoid peak labor loads; plan ahead. For example, farrow sows before field work.**
2) **Increase yield per acre or pounds of grain per animal.**
3) **Keep machinery in good repair; do repairs during slow periods of the year.**
4) **Use safety and good health practices consistently.**
5) **Cooperate with neighbors, use custom work, or hire part-time help to smooth out peak needs.**
6) **Adjust the size of the business or enterprise to get the most efficiency.**
7) **Arrange tools, buildings, and feeders to reduce travel.**
8) **Plan for circular travel in chore work.**
9) **In using hired labor, select a good employee and pay that employee an appropriate salary.**
10) **Plan ahead for all work and avoid wasted time.**
11) **Perform indirect labor such as routine maintenance work on buildings and fences during slow periods.**

Pass out HO 6.1 to students. List the eleven suggestions for improving efficiency on the board or overhead and tie in local examples with each suggestion. Discuss each example as it is listed.

Q2. What are some ways to reduce chore labor?

A2.
1) Manage livestock in sizable groups.
2) Locate feed and other supplies where they are used.
3) Use mechanical labor where possible.
4) Strive for high yields per animal.

List suggestions for ways to reduce chore labor on the board and have students react to them.

Q3. How are labor requirements for various crops determined?

A3.
1) Determine amount of time per acre needed for each crop during each month of the year.
2) Multiply amount of time per acre per month by the number of acres.
3) Calculate the number of working hours available for field work each month.
4) Determine the amount of operator and/or family labor available each month.
5) Adjust cropping system to minimize peak labor demands.
6) Plan for peak labor periods in advance.

Distribute HO 6.2. List the common crops grown in the area. Have students determine the labor requirements for various sized fields of the common crops. Give examples of the amount of labor available and have students discuss how they would manage labor under those conditions. Have students complete sections A and B of AS 6.1. An example answer sheet has been provided. It is suggested that the instructor provide the type of crop and the acreage consistent with the local area.

Q4. How are labor requirements for various livestock enterprises determined?

A4.
1) Determine the amount of time needed per animal unit during each month of the year.
2) Multiply the amount of time per month by the number of animal units.
3) Determine the amount of operator and/or family labor that is available.
4) Add monthly labor requirements for livestock to the labor requirements for cropping system (if applicable).
5) Adjust livestock system to minimize peak labor demands.
6) Plan for peak labor demands in advance.

List the common livestock enterprises in the local area. Have students find the labor requirements for various levels of production and types of enterprises. Give a different example of the amount of labor available and have the students discuss how they would manage labor under these conditions. Have students complete AS 6.1. Students should use HO 6.2 and the completed first page of AS 6.1 to complete the second page of AS 6.1.

Q5. What factors should be considered when hiring farm labor?

A5. 1) Wage and hour agreements, fringe benefits, and incentives
2) Working conditions
3) Employer-employee relations

Have the students read UMC Guide G700. Discuss each of the factors as covered in the guide. At this point, have students complete line 6 through line 11 of Form 6. Have students charge any additional labor needed at $5 per hour. Form 6 is in Section IV of Manual 75.

F. Other activities

Have the students fill out Form 6 again for their own example farm. If additional labor is needed it should be charged at $1,000 per month or $5 per hour and entered on line 12 of Form 6.

G. Conclusion

There are several ways to improve labor efficiency. Efficiency of labor is important because there is a limited amount of time available each year. For managers to make best use of their time, it is essential to determine the labor requirements of each enterprise and make sure there is enough time available. One way to increase the amount of time available is by hiring additional labor. The manager must be certain that the extra labor is worth the cost.

H. Competency

Plan for the labor needs of a farm business.

I. Answers to Evaluation

1. Answers should include five of the following:
   Avoid peak labor loads; plan ahead. For example, farrow sows before field work.
   Increase yield per acre of pounds of grain per animal.
   Keep machinery in good repair; do repairs during slow periods of the year.
   Use safety and good health practices consistently.
   Cooperate with neighbors, use custom work, or hire part-time help to smooth out peak needs.
   Adjust the size of the business or enterprise to get the most efficiency.
   Arrange tools, buildings, and feeders to reduce travel.
   Plan for circular travel in chore work.
   In using hired labor, select a good employee and pay that employee an appropriate salary.
   Plan ahead for all work and avoid wasted time.
   Perform indirect labor such as routine maintenance work on buildings and fences during slow periods.

2. Any two of the following:
    - Manage livestock in sizable groups.
    - Locate food and other supplies where they are used.
    - Use mechanical labor where possible.
    - Strive for high yield per animal.

3. Fringe benefits, working conditions, and employee-employer relations

4. To avoid peak labor loads from different enterprises from occurring at the same time

5. Suggested answers include the following:
    - Secure part-time labor.
    - Cooperate with other farmers in sharing custom work.
    - Adjust the size of each enterprise to reduce conflicts.
    - Plan ahead for all work and avoid wasted time.
    - (Instructor may include additional answers.)

J. Answers to Manual 75 Form 6

See the following page.

K. Answers to AS 6.1

See pages 84 and 85.

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FORM 6
SUMMARY: CAPITAL, LABOR, INCOME, & RETURNS
Sample Case Farm Revision

Present Plan ___
Alternative No. 1

	Item (1)	Details (2)	Totals (3)
	FARM INVESTMENT CAPITAL:		
1	Breeding livestock (Form 3, Line 5)	$	
2	Machinery & equipment (Form 3, Line 13)		
3	Buildings & facilities (Form 3, Line 20)		
4	Land & improvements (Form 3, Line 25)		
5	AVERAGE FARM INVESTMENT CAPITAL (Form 3, Line 26)		$
	DIRECT LABOR REQUIRED:		
6	Crop labor hours (Form 4, Line 20, Col. 8)	423.5 hrs.	
7	Livestock labor hours (Form 5, Line 11)	2,240 hrs.	
8	TOTAL HOURS DIRECT LABOR (sum Lines 6, 7)		2,663.5 hrs.
	INCOME OVER VARIABLE COSTS:		
9	Crop income over variable costs (Form 4, L. 20, Col. 7)	$ 8,790	
10	Livestock income over variable costs (Form 5, L. 14)	27,680	
11	TOTAL INCOME OVER VARIABLE COSTS (sum Lines 9 and 10)		$ 36,470
	OTHER CASH COSTS & NET CASH INCOME:[1]		
12	Hired labor: ______ no. men x $__________/year =	$	
13	Cash rent paid: ______ acres rented x $_______/acre =		
14	Real estate & property taxes (est. 0.5% of Line 5)		
15	Building insurance & repairs (est. 3% of Line 3)		
16	Miscellaneous expense (est. 2% of Line 11)		
17	TOTAL OTHER CASH COSTS (sum Lines 12, 13, 14, 15, 16)		$
18	NET CASH FARM INCOME (Line 11 minus Line 17)		$
	DEPRECIATION:[1]		
19	Machinery & equipment (est. 20% of Line 2)	$	
20	Buildings & facilities (est. 10% of Line 3)		
21	TOTAL DEPRECIATION (Line 19 + Line 20)		$
	RETURNS:		
22	Farm profit[2] (Line 18 minus Line 21)		$
23	Family labor & mgt. charge (est.) _____ hrs. x $_____/hr.=	$	
24	Return to farm investment capital (Line 22 minus Line 23)		$
25	Rate earned on farm investment capital (L. 24 ÷ L. 5)		%
26	Interest on farm investment capital (____% of Line 5)	$	
27	Return to family labor & management (Line 22 minus L. 26)		$

---

[1] Percentage estimates are only guidelines.

[2] Estimated return to family labor, farm investment capital, and management.

Rev. 10/78 SOURCE: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

EXAMPLE LABOR BUDGET

Labor Available

Operator	100 hrs/month
Family	35 hrs/month
Total	135 hrs/month

Section A - Cropping System

Acres of row crops		Time requirements per acre per year		Total time (acres x time)
1. 50 acres corn	x	7.5 hrs	=	375 hrs
2. 50 acres soybeans	x	5.2 hrs	=	260 hrs
3.	x		=	
		Section A Total	=	635 hrs

Section B - Small Grains, Pasture, Hay

Number of Acres		Time requirements per acre per year		Total time (acres x time)
1. 50 acres pasture	x	.07 hr/acre	=	3.5 hrs
2. 25 acres hay	x	5.4 hr/acre	=	135 hrs
3. 50 acres wheat	x	3.8 hr/acre	=	190 hrs
		Section B Total	=	328.5 hrs

Section C - Livestock

Type and size of enterprise		Time requirements per animal unit per year		Total time (units x time)
1. 20 sow units	x	20 hr/unit	=	400 hrs
2. 20 cow/calf units	x	7 hr/unit	=	180 hrs
3.	x		=	
		Section C Total	=	540.0 hrs

Add the totals of sections A, B, and C to get the subtotal.

A + B + C = SUBTOTAL = 1503.5

INDIRECT LABOR = SUBTOTAL x .20 = TOTAL = 300.7

Multiply the subtotal by 20 percent for indirect labor. Managers should distribute indirect labor hours in months of low labor demand.

SUBTOTAL + INDIRECT LABOR = TOTAL = 1804.2

LABOR BUDGET

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Section A - Cropping System													
1. 50 acres corn	12.5	12.5	12.5	75	75	25	25	20	20	42.5	42.5	12.5	375 hrs
2. 50 acres soy-beans	5	5	5	45	45	32.5	32.5	7.5	7.5	35.	35	5	260 hrs
3.													
Section B - Small Grains, Pasture, Hay													
1. 50 acres pasture	–	–	—	.25	.25	.50	.50	.75	.75	.25	.25	—	3.5 hrs
2. 25 acres hay	—	—	—	5	5	62.5	62.5	—	–	—	—	–	135 hrs
3. 50 acres wheat	—	—	—	—	—	40.0	40.0	35.0	35.0	20.0	20.0	—	190 hrs
Section C - Livestock													
1. 20 sow unit	40	40	40	40	40	20	20	40	40	20	20	40	400 hrs
2. 20 cow/calf units	16	16	16	6	6	10	10	10	10	12	12	16	140 hrs
3.													
Labor Requirement	73.5	73.5	73.5	171.25	171.25	190.5	190.5	113.25	113.25	129.75	129.75	73.5	1503.5 hrs
Indirect Labor	61.5	61.5	61.5	—	—	—	—	21.75	21.75	5.25	5.95	61.5	300.7 hrs.
Total Labor	135.0	135.0	135.0	171.25	171.25	190.5	190.5	135.0	135.0	135.0	135.7	135.0	1804.2 hrs
Labor Surplus + or Shortage —	0	0	0	-36.25	-36.25	-55.5	-55.5	0	0	0	-.7	0	-184.2

Name ____________

Lesson 6: Determining Labor Needs and Uses

Date ____________

EVALUATION

Complete the following short answer questions.

1. Identify five ways to increase labor efficiency.

   a.

   b.

   c.

   d.

   e.

2. Explain two ways of reducing chore labor.

   a.

   b.

3. What factor(s) should be considered when hiring farm employees?

4. Explain why it is important to determine the labor requirement for each farm enterprise ahead of time.

5. Identify three ways of smoothing out peak labor loads.

   a.

   b.

   c.

UTILIZING FARM LABOR

"A farmer's work is never done!" This is a familiar quote with people involved in production agriculture. However, there are some general rules that can be used to increase labor efficiency. Efficiency of labor allows one to have more time available. This time could be used to increase the size of the farm operation, increase off-farm employment, improve record keeping, or help increase net income. The steps are listed below.

1. Avoid peak labor loads; plan ahead. For example, farrow sows before field work.
2. Increase yield per acre or pounds of grain per animal.
3. Keep machinery in good repair; do repairs during slow periods of the year.
4. Use safety and good health practices consistently.
5. Cooperate with neighbors; use custom work or hire part-time help to smooth out peak needs.
6. Adjust the size of the business or enterprise to get the most efficiency.
7. Arrange tools, buildings, feeders to reduce travel.
8. Plan for circular travel in chore work.
9. If using hired labor, select a good employee and pay that employee an appropriate salary.
10. Plan ahead for all work and avoid wasted time.
11. Perform indirect labor, such as routine maintenance work on buildings and fences, during slow periods.

Routine livestock care may take a large part out of each day. The steps listed below are designed to reduce the amount of time involved in chore labor. This will increase the amount of time available for other activities.

1. Manage livestock in sizable groups.
2. Locate feed and other supplies where they are used.
3. Use mechanical labor where possible.
4. Strive for high yields per animal.

HO 6.2

LABOR REQUIREMENTS

Labor available:

Operator ____________________

Family ____________________

Labor needs by enterprise:

Soybeans	5.2 hrs./ac./yr. distributed as follows:	
	December-March:	0.10 hr./ac./month
	April and May:	0.90 hr./ac./month
	June and July:	0.65 hr./ac./month
	August and September	0.15 hr./ac./month
	October and November	0.70 hr./ac./month
Wheat	3.8 hrs./ac./yr. distributed as follows:	
	June and July:	0.80 hr./ac./month
	August and September:	0.70 hr./ac./month
	October and November:	0.40 hr./ac./month
Corn	75 hr./ac./yr. distributed as follows:	
	December-March:	0.25 hr./ac./month
	April and May:	1.50 hr./ac./month
	June and July:	0.50 hr./ac./month
	August and September:	0.40 hr./ac./month
	October and November:	0.85 hr./ac./month
Barley	3.8 hr./ac./yr. distributed as follows:	
	June and July:	0.80 hr./ac./month
	August and September:	0.70 hr./ac./month
	October and November:	0.40 hr./ac./month
Perennial Pasture	0.07 hr./ac./yr. distributed as follows:	
	April and May:	0.005 hr./ac./month
	June and July:	0.010 hr./ac./month
	August and September:	0.015 hr./ac./month
	October and November:	0.005 hr./ac./month
Timber Pasture	0.07 hr./ac./yr. distributed as follows:	
	April and May:	0.005 hr./ac./month
	June and July:	0.010 hr./ac./month
	August and September:	0.015 hr./ac./month
	October and November:	0.005 hr./ac./month

Hay	5.4 hr./ac./yr. distributed as follows:	
	April and May:	0.20 hr./ac./month
	June and July:	2.50 hr./ac./month
Litters	finished hogs, 20 hr./unit/yr. distributed as follows:	
	December-May, August and September:	20 hr./unit/month
	June, July, October and November:	40 hr./unit/month
Beef Cows	7/hr./unit/yr. distributed as follows:	
	December-March:	0.70 hr./unit/month
	April, May:	0.20 hr./unit/month
	October and November:	0.55 hr./unit/month
	June-September:	0.50 hr./unit/month

(Estimate indirect labor needs as 20 percent of Total Crop and Animal needs. Distribute the indirect hours to months of low direct labor needs.)

Complete a similar Labor Estimate Worksheet for your family's farm or for some other operation with which you are familiar. How is this useful to the manager for long-range planning?

Adjust labor requirement based on the efficiency of your family's operation.

REFERENCES

Castle, Emery N., et al. Farm Business Management, 2nd ed. New York: The Macmillan Co., 1972.

Fenton, T. E., et al. Productivity Levels of Some Iowa Soils, Iowa State Agricultural Experiment Station Special Report 66, April 1971.

Modern Agricultural Management, 2nd ed. A systems approach to farming. Donald D. Osburn, Kenneth C. Schneeberger, The University of Missouri, Reston Publishing Co., Inc., A Prentice-Hall Company, Reston, VA.

AS 6.1

EXAMPLE LABOR BUDGET

Labor Available

Operator ______________
Family ______________
Total ______________

Section A - Cropping System

Acres of row crops		Time requirements per acre per year		Total time (acres x time)
1.	x		=	
2.	x		=	
3.	x		=	
		Section A Total	=	

Section B - Small Grains, Pasture, Hay

Number of Acres		Time requirements per acre per year		Total time (acres x time)
1.	x		=	
2.	x		=	
3.	x		=	
		Section B Total	=	

Section C - Livestock

Type and size of enterprise		Time requirements per animal unit per year		Total time (units x time)
1.	x		=	
2.	x		=	
3.	x		=	
		Section C Total	=	

Add the totals of sections A, B, and C to get the subtotal.

A + B + C = SUBTOTAL = ______________

INDIRECT LABOR = SUBTOTAL x .20 = TOTAL = ______________

Multiply the subtotal by 20 percent for indirect labor. Managers should distribute indirect labor hours in months of low labor demand.

SUBTOTAL + INDIRECT LABOR = TOTAL = ______________

LABOR BUDGET

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Section A - Cropping System 1.													
2.													
3.													
Section B - Small Grains, Pasture, Hay 1.													
2.													
3.													
Section C - Livestock 1.													
2.													
3.													
Labor Requirement													
Indirect Labor													
Total Labor													
Labor Surplus or Shortage													

UNIT III - PLANNING THE FARM BUSINESS

Lesson 7: Determining the Amount of Capital Needed for a Farm Plan

Objective: The student will be able to determine the amount of capital needed for a farm business.

Student Reference

1. Missouri Farm Planning Handbook (Manual 75). University of Missouri-Columbia: College of Agriculture-Extension Division, 1986.
   a) Form 3 - Summary: Farm Investment

Teacher Reference

1. Osborn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.

UNIT III - PLANNING THE FARM BUSINESS

Lesson 7: Determining the Amount of Capital Needed for a Farm Plan

TEACHING PROCEDURES

NOTE: This lesson does not have any study questions for study purposes. It is a work-through lesson. Form 3 and Form 6 are used to determine the amount of capital needed.

A. Review

Review previous lesson.

B. Motivation

One of the biggest limitations to getting started in farming is not obtaining enough capital. By developing the skills to determine capital requirements, students will be better prepared to make farm planning decisions. This will reflect in their ability to generate adequate capital for operating a farm business.

C. Assignment

Have students complete Form 3 for the revised farm plan. This form can be found in section IV of Manual 75. Transfer the information on lines 5, 13, 20, and 25 on Form 3 to lines 1 through 4 on Form 6 of Lesson 6. Then have students complete Form 6 from Lesson 6.

D. Supervised study

E. Discussion

Make some comparisons at this point. If some students are over their limit on farm capital, have them revise their plans to stay under 150 percent of the present situation.

NOTE: The sample case farm information for this lesson is found on Form 4 in Lesson 3, Form 5 in Lesson 5, and Form 6 in Lesson 6.

F. Other activities

Invite a loan officer to speak with the class on proper procedures for obtaining a business loan.

G. Conclusion

To determine the amount of capital needed in a farm business, one must examine the entire farm plan closely and pay careful attention to the capital requirements of both the livestock and cropping systems.

H. Competency

Determine the amount of capital needed for the farm business.

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FORM 3
SUMMARY: FARM INVESTMENT CAPITAL
Sample Case Farm Revision *

Present Plan___
Alternative No. 1

	Item & description	Year to invest	New cost	Average value[1]	Total value
	(1)		(2)	(3)	(4)
1	Breeding livestock (present or alternative):				
2	Cows _____ (units) x $_____ /unit =			$	
3	Sows 80 (units) x $ 180 /unit =			14,400	
4	Other _____ (units) x $_____ /unit =				
5	TOTAL BREEDING LIVESTOCK CAPITAL (sum Lines 2, 3, 4)				$ 14,400
6	Machinery & equipment (present)			$	
7	Added machinery & equipment:[2]				
8	Purchase 4-16" Plow		$	$ 2,000	
9					
10					
11					
12					
13	TOTAL MACHINERY & EQUIPMENT CAPITAL (sum Lines 6, 8, 9, 10, 11, 12)				$ 13,500
14	Buildings & facilities (present)			$	
15	Added buildings & facilities:[2]				
16	Individual Houses for 40 sows $300 ea.		$ 12,000	$ 9,000	
17	300 head Pig Nursery		11,000	8,250	
18	300 head Hog Finishing Floor		16,000	12,000	
19	Added Fencing, Feeders, etc.,		2500	1875	
20	TOTAL BUILDING & FACILITIES CAPITAL (sum Lines 14, 16, 17, 18, 19)				$ 31,125
21	Land & land improvements (present)[3] 185 ac. x $ 400 /acre - Line 20			$ 42,875	
22	Added land & land improvements:[2]				
23	Terracing on Field D and F		$	1,500	
24					
25	TOTAL LAND & LAND IMPROVEMENTS CAPITAL (sum Lines 21, 23, 24)				$ 44,375
26	TOTAL FARM INVESTMENT CAPITAL (sum Lines 5, 13, 20, 25)				$ 103,400

[1] Present system values for Lines 6 and 14 are depreciated values (such as those on depreciation schedule). For new machinery and equipment added in alternative system, average value equals approximately 1/2 of new cost. For new buildings, fences, and facilities added, average value equals approximately 3/4 of new cost. For non-depreciable items (such as land), average value equals new cost.

[2] Disinvestment may also be considered in alternative plan. Values of machinery, equipment, facilities, land, etc., not needed in alternative plan are entered as negative figures in Column 3.

[3] Does not include value of dwelling, farm buildings, fences, and facilities.

* Cattle were sold for $16,000. Hogs were purchased for $14,400. The 3-16" plow was traded in for a 4-16" plow. The remaining capital was spent on additional improvements.

SOURCE: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

FM 7536
Farm Mgt. Ext.
Univ. of Mo.

FORM 6
SUMMARY: CAPITAL, LABOR, INCOME, & RETURNS
Sample Case Farm Revision

Present Plan ___
Alternative No. 1

	Item (1)	Details (2)	Totals (3)
	FARM INVESTMENT CAPITAL:		
1	Breeding livestock (Form 3, Line 5)	$ 14,400	
2	Machinery & equipment (Form 3, Line 13)	13,500	
3	Buildings & facilities (Form 3, Line 20)	31,125	
4	Land & improvements (Form 3, Line 25)	44,575	
5	AVERAGE FARM INVESTMENT CAPITAL (Form 3, Line 26)		$ 103,400
	DIRECT LABOR REQUIRED:		
6	Crop labor hours (Form 4, Line 20, Col. 8)	423.5 hrs.	
7	Livestock labor hours (Form 5, Line 11)	2,240 hrs.	
8	TOTAL HOURS DIRECT LABOR (sum Lines 6, 7)		2663.5 hrs.
	INCOME OVER VARIABLE COSTS:		
9	Crop income over variable costs (Form 4, L. 20, Col. 7)	$ 8790	
10	Livestock income over variable costs (Form 5, L. 14)	27680	
11	TOTAL INCOME OVER VARIABLE COSTS (sum Lines 9 and 10)		$ 36,470
	OTHER CASH COSTS & NET CASH INCOME:[1]		
12	Hired labor: ______ no. men x $ ________ /year =	$	
13	Cash rent paid: ______ acres rented x $ ______ /acre =		
14	Real estate & property taxes (est. 0.5% of Line 5)	517	
15	Building insurance & repairs (est. 3% of Line 3)	934	
16	Miscellaneous expense (est. 2% of Line 11)	729	
17	TOTAL OTHER CASH COSTS (sum Lines 12, 13, 14, 15, 16)		$ 2,180
18	NET CASH FARM INCOME (Line 11 minus Line 17)		$ 34,290
	DEPRECIATION:[1]		
19	Machinery & equipment (est. 20% of Line 2)	$ 2,700	
20	Buildings & facilities (est. 10% of Line 3)	3,113	
21	TOTAL DEPRECIATION (Line 19 + Line 20)		$ 5,813
	RETURNS:		
22	Farm profit[2] (Line 18 minus Line 21)		$ 28,477
23	Family labor & mgt. charge (est.) 2400 hrs. x $ 5 /hr. =	$ 12,000	
24	Return to farm investment capital (Line 22 minus Line 23)		$ 16,477
25	Rate earned on farm investment capital (L. 24 ÷ L. 5)		16 %
26	Interest on farm investment capital (10 % of Line 5)	$ 10,340	
27	Return to family labor & management (Line 22 minus L. 26)		$ 18,137

[1] Percentage estimates are only guidelines.

[2] Estimated return to family labor, farm investment capital, and management.

Rev. 10/78 SOURCE: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

UNIT III - PLANNING THE FARM BUSINESS

Lesson 8: Estimating Cash Income and Farm Business Profitability

Objective: The student will be able to estimate cash income and farm business profitability.

Student References

1. Missouri Farm Planning Handbook (Manual 75). University of Missouri-Columbia: College of Agriculture-Extension Division, 1986.
    - a) Form 7 - Summary - Debt Repayment and Available Cash
    - b) Form 8 - Estimating Annual Principal and Interest Payments
2. Handout
    - a) HO 8.1: Strategies That Can Be Used to Live with Uncertainty
3. Assignment Sheet
    - a) AS 8.1: Estimating Income Taxes and Social Security Taxes

Teacher Reference

1. Plain, Ron. "1986 Tax Reform Act--Impact on Agriculture." Farm Management Newsletter. Columbia, MO: Missouri Cooperative Extension Service, Dec. 1986.

UNIT III - PLANNING THE FARM BUSINESS

Lesson 8: Estimating Cash Income and Farm Business Profitability

TEACHING PROCEDURES

NOTE: This lesson does not have any study questions for study purposes. It is a work-through lesson. Forms 6, 7, and 8, and AS 8.1 are used to determine the amount of money available and its uses.

A. Review

Review previous lesson.

B. Motivation

Ask students to determine how much money was earned on the revised farm plan. Allow them two or three minutes to estimate the amount. There will probably be a wide variance in answers. Over time, there is often a wide variance in farm income. This variance is due to the risk associated with farming. By managing this risk and by keeping accurate records, one can better stabilize farm income. Distribute HO 8.1 and discuss some of the risk management strategies that can be used. Students should then be ready to determine farm profit.

C. Assignment

Complete forms 7 and 8, and AS 8.1. Point out that line 10 on Form 7 gives the amount of cash available for family living, new investments, savings, etc. Is it enough to suit each student? Look at line 22 on Form 6 from Lesson 7, which is the farm profit line. Compare it also with the present situation. Usually students will be amazed at the amount of increase.

D. Supervised study

E. Discussion

Discuss the results of forms 7 and 8, and AS 8.1. For this example, on AS 8.1 line 6, the individual is married and filing jointly for 1987. The individual has two children.

F. Conclusion

Estimating farm business cash income is essential in maintaining a secure future for the farm business. After cash income is estimated, the business operator then decides if the cash income is sufficient. If it will not be sufficient then changes in the farm business should be considered,

G. Competency

Estimate farm business cash income and profitability.

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FORM 7
SUMMARY: DEBT REPAYMENT & AVAILABLE CASH
(optional)

Sample Case Farm Revision

Present Plan___
Alternative No. 1

	Item (1)	Details (2)	Totals (3)
1	Net cash farm income (Form 6, Line 18)	$ 34,290	
2	Non-farm income		
3	Total net cash income (Line 1 + Line 2)		$34,290
4	Interest paid on I.T. & L.T. debts (see Form 8, Line 6)	$ 1,395	
5	Est. income tax & Social Security (see Form 9, L. 9)	6,284	
6	Family living expenses (estimate)	15,000	
7	Subtotal (sum Lines 4, 5, 6)		$ 22,679
8	Cash available before payments (Line 3 minus Line 7)		11,611
9	Total annual principal payments (Form 8, Line 5)		4,650
10	Net cash available or balance (Line 8 minus Line 9)[1]		$ 6961

[1] May be used for replacement of capital items, new investments, and cash reserve.

FORM 8
ESTIMATING ANNUAL PRINCIPAL & INTEREST PAYMENTS
(optional)

Present Plan___
Alternative No. 1

	Item[1] (1)	Average[2] principal payment (2)	Average[3] debt (3)	Average interest rate (4)	Average[4] interest paid (5)
	BEGINNING DEBTS:				
1	Intermediate (1-9 years) $______	$	$	%	$
2	Long term (10+ years) $______	$	$	%	$
	ADDED DEBTS:				
3	Added intermediate 5yrs. 10% $ 14,200	$ 2,840	$ 7,100	12 %	$ 852
4	Added long term $ 9,050	$ 1,810	$ 4,525	12 %	$ 543
5	Total Principal Payments (sum Lines 1, 2, 3, 4)	$ 4,650			
6	Total Interest Paid (sum Lines 1, 2, 3, 4)				$ 1,395

[1] Enter beginning debt amounts in Col. 1 blank.

[2] Estimate the average principal payment on the beginning debts over the next 5 years.

[3] Estimate of average debt over next 5 years = beginning amount (Col. 1) less 2½ principal payments (Col. 2).

[4] Estimate average interest paid on I.T. and L.T. debts = average debt (Col. 3) times average interest rate (Col. 4).

SOURCE: Missouri Farm Planning Handbook (Manual 75), University of Missouri-Columbia, College of Agriculture-Extension Division

Estimating Income Taxes and Social Security Taxes*

Line	Item (1)	Details (2)	Totals (3)
1	Farm profit (Form 6, Line 22)	$ 28,576	
2	Less interest paid (Form 7, Line 4)	1,395	
3	Farm income (Line 1 – Line 2)	27,181	
4	Nonfarm income	—	
5	Total income (Line 3 + Line 4)		27,181
6	Standard deduction + personal exemptions[1]	11,360	
7	Taxable income (Line 5 – Line 6)	15,821	
8	Estimated Federal Taxes[2]	1,593	
9	Estimated State Taxes[3]	721	
10	Total estimated taxes (Line 8 + Line 9)		2,314
11	Estimated self-employment tax[4]	3,343	
12	Estimated Social Security withholdings on nonfarm income[4]	0	
13	Total estimated Social Security (Line 11 + Line 12)		3,343
14	Total estimated taxes and Social Security (Line 10 + Line 13)	5,657	
15	Disposable income (Line 5 – Line 14)		21,524

This form replaces Form 9 of Manual 75. Line 14 is now the total estimated taxes and social security instead of Line 9, Form 9.

[1] Entering Standard Deduction and Personal Exemptions

	Standard Deduction		Personal Exemptions	
	1987	1988	Year	Each Dependent
			1987	$1,900
Single	$2,540	$3,000	1988	1,950
Married, joint filing	3,760	5,000	1989	2,000

[2] Federal Taxable Income

		Pay Base Tax of:	Plus this % of amount over lower bracket:
1987 Tax Rates:	$ 0-$ 3,000	$ 0	11%
	3,000- 28,000	330	15
	28,000- 45,000	4,080	28
	45,000- 90,000	8,840	35
	90,000 & higher	24,590	385
1988 Tax Rates:	$ 0-$ 29,750	$ 0	15%
	29,750- 71,900	4,463	28
	71,900- 171,090	16,265	33
	171,090 & higher	48,998	28

[3] State Taxable Income	Pay Base Tax of:	Plus this amount over lower bracket:
$0 - 9,000	0	3.5%
$9,000 & higher	$312	6%

[4] Social Security self-employment tax rate:

Year	Maximum taxable wage base		Tax rate		Maximum Soc. Sec. tax
1986	$43,500	x	.123	=	$5,351
1987	$45,000	x	.123	=	$5,535

STRATEGIES THAT CAN BE USED TO LIVE WITH UNCERTAINTY

1. Selection of a low risk enterprize (especially when getting started)

2. Diversification
   a. The goal is to spread risks between more than one enterprise. Diversification helps to stabilize income by reducing the risk of price cycles, weather patterns, and other management concerns.
   b. With diversification, income from the enterprises being managed should not be related. Factors that affect the income from one enterprise should not affect the other enterprise. For example, rainfall is a major factor in corn, soybean, and milo production. The level of yields during any given year is generally related. When corn yields are low, milo and soybean yields are generally low. Therefore, these three crops would not work efficiently for diversification.
   c. It makes sense to diversify to take advantage of any complementary or supplementary relationships, such as corn and hogs; small grain pasture and steers; crop residue and beef cows; beef cows and backgrounding.
   d. Diversification to achieve a proper combination of summer and winter enterprises is usually profitable.

3. Flexibility
   a. Flexible enterprises, buildings, and equipment can be used by the manager in various ways and adapted for the most efficient use according to current conditions.
   b. Income may not be as high as with specialized resources when conditions are profitable for a certain crop. However, income will be more stable because flexible resources can always be used in some way to make a profit.
   c. The following are flexible resources.
      1) Quonset hut - used for various purposes: from hog shelter to calf hutch
      2) Row-crop tractor - used for non-row crops
      3) Pickup truck - used for almost any hauling job
   d. The following are inflexible resources.
      1) Milking parlor - use restricted to dairy operation
      2) Poultry brooding houses - use restricted to hatching chicks

4. Liquidity
   a. Liquidity is the ability to change the form of an asset.
      1) Grain in storage is quite liquid because it can be sold quickly.
      2) Land is not liquid. However, equity in land is a capital pool that can be converted to operating capital.
   b. Liquidity involves flexibility and investment advantages.
   c. Liquidity is reserve against unfavorable developments.

5. Insurance - Insurance is substituting the low probability of a large cost for the high (100 percent) probability of a low cost.
   a. Individuals pay relatively small fees to the insurance company.
   b. The insurance company pools the money and invests it to earn more money for the pool.

- c. If individuals incur losses they are insured against, the company pays them from the money in the pool.
- d. The following are examples of insurance for a farmer.
    - 1) Liability
    - 2) All-purpose crop insurance
    - 3) Life insurance
    - 4) Health insurance
    - 5) Fire insurance for machinery

6. Contracts - hedging, forward contracting, spread marketing
    - a. Shifting risk at a cost - may pass up opportunities of very high profits or high losses to assure some minimum profit
    - b. For both purchased items and sale items
    - c. Vertical integration - A single firm controls two or more stages of the production-marketing process in an effort to cut out the middleman.
        - 1) This tends to favor greater effort and lower costs in the marketing and processing stages.
        - 2) Examples include the broiler industry, pig and cattle fattening, and fruit growers.

7. Improving level of knowledge
    - a. There is some cost of acquiring knowledge, possibly opportunity cost.
    - b. A payoff is expected from added knowledge.

8. Trying to control the uncertainty
    - a. Irrigation to control some weather
    - b. Herbicides to control weeds
    - c. Insecticides to control pests

Credit: Agricultural Management and Economics. Columbia, Mo: Instructional Materials Laboratory, 1977.

Estimating Income Taxes and Social Security Taxes*

Line	Item	Details	Totals
	(1)	(2)	(3)
1	Farm profit (Form 6, Line 22)	$	▨
2	Less interest paid (Form 7, Line 4)		▨
3	Farm income (Line 1 – Line 2)		▨
4	Nonfarm income		▨
5	Total income (Line 3 + Line 4)	▨	
6	Standard deduction + personal exemptions[1]		▨
7	Taxable income (Line 5 – Line 6)		▨
8	Estimated Federal Taxes[2]		▨
9	Estimated State Taxes[3]		▨
10	Total estimated taxes (Line 8 + Line 9)	▨	
11	Estimated self-employment tax[4]		▨
12	Estimated Social Security withholdings on nonfarm income[4]		▨
13	Total estimated Social Security (Line 11 + Line 12)	▨	
14	Total estimated taxes and Social Security (Line 10 + Line 13)		▨
15	Disposable income (Line 5 – Line 14)	▨	

This form replaces Form 9 of Manual 75. Line 14 is now the total estimated taxes and social security instead of Line 9, Form 9.

[1] Entering Standard Deduction and Personal Exemptions

	Standard Deduction		Personal Exemptions	
	1987	1988	Year	Each Dependent
			1987	$1,900
Single	$2,540	$3,000	1988	1,950
Married, joint filing	3,760	5,000	1989	2,000

[2] Federal Taxable Income

		Pay Base Tax of:	Plus this % of amount over lower bracket:
1987 Tax Rates:	$ 0-$ 3,000	$ 0	11%
	3,000- 28,000	330	15
	28,000- 45,000	4,080	28
	45,000- 90,000	8,840	35
	90,000 & higher	24,590	385
1988 Tax Rates:	$ 0-$ 29,750	$ 0	15%
	29,750- 71,900	4,463	28
	71,900- 171,090	16,265	33
	171,090 & higher	48,998	28

[3] State Taxable Income	Pay Base Tax of:	Plus this amount over lower bracket:
$0 - 9,000	0	3.5%
$9,000 & higher	$312	6%

[4] Social Security self-employment tax rate:

Year	Maximum taxable wage base		Tax rate		Maximum Soc. Sec. tax
1986	$43,500	x	.123	=	$5,351
1987	$45,000	x	.123	=	$5,535

UNIT III - PLANNING THE FARM BUSINESS

Lesson 9: Revising a Farm Plan

Objective: The student will be able to revise a farm plan.

Student References

1. Missouri Farm Planning Handbook (Manual 75). University of Missouri-Columbia: College of Agriculture-Extension Division, 1986.
   - a) Form 2 - Land Use Classification
   - b) Form 3 - Farm Investment Capital
   - c) Form 4 - Cropping System
   - d) Form 5 - Livestock System
   - e) Form 6 - Summary: Capital, Labor, Income and Returns
   - f) Form 7 - Summary: Debt Repayment and Available Cash
   - g) Form 8 - Estimating Annual Principal and Interest Payments
   - h) Form 9 - Estimating Income Taxes and Social Security
2. Handout
   - a) HO 9.1: A Hypothetical Case Farm
3. Assignment Sheet
   - a) AS 9.1: Farm Plan Grade Sheet

UNIT III - PLANNING THE FARM BUSINESS

Lesson 9: Revising a Farm Plan

TEACHING PROCEDURES

A. Review

Review the previous lesson.

B. Motivation

Ask for a student to volunteer ideas for a revision of a farm plan generated in the local community. Ask what steps would be used in revising this farm plan. Students should review notes from previous lessons in this unit. This lesson will allow them to apply their understanding of this unit.

C. Assignment

Each student is to develop a present situation and a revision for a local farm. The instructor may allow the students to use their own home farms if applicable. The instructor should have previously completed the present situation of the example farm. Students will need to complete Forms 2, 3, 4, 5, 6, 7, 8, and 9 from the Manual 75. Students are encouraged to make their own decisions in an attempt to maximize after-tax income.

D. Supervised study

E. Discussion

Explain the use of the grading sheet (AS 9.1).

1. Each student may receive negative and positive points on his or her plan. Negative points come from errors pointed out by other students and suggestions by other students that would substantially increase net farm profit. As an example, if Student A correctly points out that Student B would have to buy more grain than is shown for the proposed livestock program, Student A receives a point in column 10, and Student B receives a negative point in column 2.

2. Column 8 is a point value reflecting improvement in farm profit (line 22 on Form 6). As an example, if the present situation has line 22 at $12,000, and the revised plan has $22,000, 10 points (1 point per $1,000) could be listed in column 8.

3. Column 9 is the instructor's evaluation of how hard the student tried, the amount of progress made, and how practical the plan is. It could be based on 50 points possible.

4. Column 11 is the net from subtracting the total of columns 1 through 7 from the total of columns 8 through 10. This would be the grade for the past several days.

NOTE: Students should be permitted to work on their plans at home and encouraged to check with their parents to be sure the plan is practical.

5. Use the Farm Plan Grade Sheet as a way of discussing assignment (AS 9.1)

F. Other activities

If a local case farm is not available, the hypothetical case farm given in HO 9.1 can be used.

G. Conclusion

This lesson incorporates all of the information that has been covered in the previous eight lessons. The students should try to use what they have learned in implementing revised farm plans for their own farm businesses. Hopefully, by using information provided in this unit, the revised farm plan should show considerable improvement in the farm's present situation. Also, the revised farm plan should be practical so that the improvements could and should be implemented to improve farm business profitability.

H. Competency

Revise a farm plan.

I. Answers to Manual 75 forms

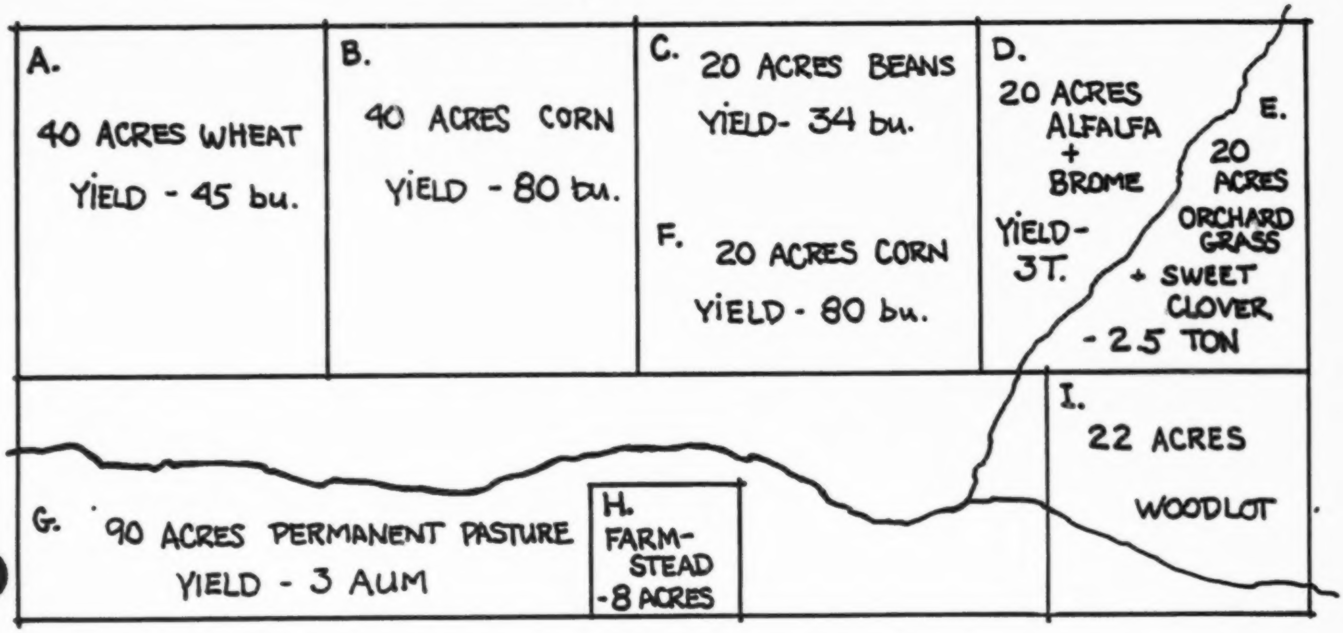
There are no specific answers given. The Instructor will need to evaluate these forms based on what information the students were given in class.

J. Answers to AS 9.1

There are no specific answers for this grade sheet.

A Hypothetical Case Farm

(Could be used as a separate problem)


A.
40 ACRES WHEAT
YIELD - 45 bu.
B.
40 ACRES CORN
YIELD - 80 bu.
C. 20 ACRES BEANS
YIELD- 34 bu.
F. 20 ACRES CORN
YIELD - 80 bu.
D.
20 ACRES
ALFALFA
+
BROME
YIELD-
3T.
E.
20
ACRES
ORCHARD
GRASS
+ SWEET
CLOVER
- 2.5 TON
I.
22 ACRES
WOODLOT
G. 90 ACRES PERMANENT PASTURE
YIELD - 3 AUM
H.
FARM-
STEAD
-8 ACRES

Crops:

160 tillable acres	cost $35/acre
Sweet Clover, stalks	pastured

Livestock:

15 sows, 2 litters to market weight per sow-7.5 pigs per litter

32 beef cows, 30 calves sold at 450 lb.

Labor:

Operator	12 months
Family	4 months

Capital:

Land	$140,000
Improvements(not res.)	3,000
Machinery and equipment	16,000
Equity in capital	$ 85,000

Annual Depreciation on:

Buildings, machinery & equipment	$2,200

Farm Plan Grade Sheet

NAME	NEGATIVE POINTS							POSITIVE POINTS			
	Cropping System	Livestock System	Machinery Added	Buildings Added	Field Arrangement	Farm Stead Arrangement	Not Practical	Improvement Farm Profit	Instructor's Grade	Suggestions to others	Net
	1	2	3	4	5	6	7	8	9	10	11
JOE GREENHAND	𝍷𝍷	𝍸	𝍷			𝍷𝍷		15	95	𝍸 𝍷𝍷𝍷𝍷	59

AGRICULTURAL MANAGEMENT AND ECONOMICS

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

GETTING READY FOR THIS UNIT

Agricultural management skills include those of agricultural sales and marketing. Some of these skills are included in this unit. Those individuals wishing to continue further can obtain more information from Agricultural Business Sales and Marketing, available from the Instructional Materials Laboratory.

Examples have been included throughout the unit; however, the instructor is encouraged to provide local examples. Answers have been provided for many of the assignment sheets. The instructor should provide local data (i.e. sales tax, current prices) where applicable.

CONTENTS

Lesson 1–Role of the Employee in the Agricultural Business IV-1
    TM 1.1: Line Organization
    TM 1.2: Functional Organization
    TM 1.3: Line-and-Staff Organization
    AS 1.1: Promotion, and How It Affects the Business
Lesson 2–Communication Skills Needed in Agricultural Business IV-17
    AS 2.1: Rewriting a Letter for Conciseness
    AS 2.2: Answering the Business Phone
Lesson 3–Skills Needed for an Agricultural Sales Career IV-31
    TM 3.1: Five Stages in Making a Sale
    AS 3.1: Rate Your Sales Personality
Lesson 4–Promoting Agricultural Products. IV-43
    AS 4.1: The Cost of Media Advertising
Lesson 5–Using Agricultural Displays IV-53
    AS 5.1: Garden Supply Display

OBJECTIVES

1. The student will be able to explain the role of the employee.

2. The student will be able to explain the need for effective communication skills in an agricultural business.

3. The student will be able to identify the skills needed for a successful career in agricultural sales.

4. The student will be able to describe the use of promotion in agriculture.

5. The student will be able to explain the appropriate use of agricultural displays.

NOTE: Percent of accuracy should be set by instructors to reflect passing grades within their school systems.

COMPETENCIES

1. Explain the role of the employee.
2. Explain the need for effective communication skills in an agricultural business.
3. Identify skills needed for a successful career in agricultural sales.
4. Describe the use of promotion in agriculture.
5. Explain the appropriate use of agriculture displays.

MOTIVATIONAL TECHNIQUE OR INTEREST APPROACH

1. Bring a manager or sales representative from a successful local business (not necessarily agriculture) and ask them to present the class with the keys to a successful business. Share the topics addressed in the unit with the presenter beforehand, so the person will understand better what thrust we are after in the presentation. Make sure he or she discusses income possibilities for different kinds of jobs and the types of skills needed for people who want a good deal of income.

2. Ask students to identify the various committees in the FFA. What are the purposes for each committee? Relate the committee purposes to the various roles which employees fulfill in an agribusiness (e.g. public relations, sales, earning and savings, accounting, leadership, management, etc.).

3. Ask students to develop a list of what it takes to be successful in the FFA. Use a state or national officer as an example. Review the list and identify characteristics which would also contribute to an individual's success in an agribusiness.

4. Using the word "SUCCESS", have students (possibly in teams) identify characteristics which begin with each letter in the word, which would help students be successful. Words may include the following: Sensible, Understanding, Creative, Conscientious, Energetic, Sensitive, and Scrupulous.

EVALUATION

1. Give short, objective tests following each lesson and a more in-depth objective test at the conclusion of the unit.

2. Observe the changes in behavior as evidence of an improved ability of students to deal with problems in this unit using background acquired from earlier units.

3. Observe students' attempts to solve similar problems in their supervised occupational experience programs.

REFERENCES AND MATERIALS

1. Student Reference

   a) Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit I.

2. Teacher References

   a) Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.

   b) Hillison, John; John Crunkilton. Human Relations in Agribusiness. New York: McGraw-Hill, 1980.

   c) McGuire, James E. Advertising and Display in Agribusiness. New York: McGraw-Hill, 1979.

   d) Miller, Larry. Selling in Agribusiness. 1st ed. New York: McGraw-Hill, 1979.

   e) Wolf, Willard H. Opportunities in Agricultural Occupations. Columbus: Ohio State University, Ohio Agricultural Education Curriculum Service, 1976.

AGRICULTURAL MANAGEMENT AND ECONOMICS

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

MAJOR COMPETENCY PROFILE

Directions: Evaluate the student by checking the appropriate number or letter to indicate the degree of competency. The rating for each task should reflect **employability readiness** rather than the grades given in class.

Rating Scale:
3 **Mastered** - can work independently with no supervision
2 **Requires Supervision** - can perform job completely with limited supervision
1 **Not Mastered** - requires instruction and close supervision
N **No Exposure** - no experience or knowledge in this area

3	2	1	N	
				Operating the Agricultural Business
				1. Explain the role of the employee.
				2. Explain the need for effective communication skills in an agricultural business.
				3. Identify skills needed for a successful career in agricultural sales.
				4. Describe the use of promotion in agriculture.
				5. Explain the appropriate use of agricultural displays.

Agricultural Management and Economics

Unit IV - Operating the Agricultural Business

CLASS/SECTION ____________

STUDENTS:	Explain the role of the employee.	Explain the need for effective communication skills in an agricultural business.	Identify skills needed for a successful career in agricultural sales.	Describe the use of promotion in agriculture.	Explain the appropriate use of agricultural displays.					

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

Lesson 1: Role of the Employee in the Agricultural Business

Objective: The student will be able to explain the role of the employee.

Study Questions

1. **What are the three most important characteristics that an employer looks for in an employee?**
2. **What are the three types of organizational structure?**
3. **Who are co-workers, and what do they expect from each other?**
4. **Who are superiors and subordinates, and what rules must be followed when interacting with them?**
5. **What are some employee benefits and some restrictions employees are expected to follow in a business system?**
6. **What is morale, and how does it affect the business?**
7. **What are some practical steps that will help an employee be successful?**
8. **What are ethics, and why are they important to develop?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit IV.
2. Assignment Sheet
   - a) AS 1.1: Promotion, and How It Affects the Business

Teacher References

1. Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.
2. Hillison, John; John Crunkilton. Human Relations in Agribusiness. New York: McGraw-Hill, 1980.
3. Wolf, Williard H. Opportunities in Agricultural Occupations. Columbus: Ohio State University, Ohio Agricultural Education Curriculum Service, 1976.
4. Transparency Master
   - a) TM 1.1: Line Organization
   - b) TM 1.2: Functional Organization
   - c) TM 1.3: Line-and-Staff Organization

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

Lesson 1: Role of the Employee in the Agricultural Business

TEACHING PROCEDURES

A. Review

B. Motivation

Show a common type of job application. Ask students why employers ask certain kinds of questions and what kind of information employers are looking for. Emphasize the fact that the employee is hired to make money for the business.

C. Assignment

D. Supervised study

E. Discussion

Q1. What are the three most important characteristics that an employer looks for in an employee?

A1. 1) **Honesty**
2) **Dependability**
3) **Self-control**

Ask students to suggest characteristics they think are important to be a good employee. Write these characteristics on the board and discuss them from the employer's point of view.

Q2. What are the three types of organizational structure?

A2. 1) **Line organization - Each employee is responsible to only one supervisor. Each supervisor oversees several employees.**
2) **Functional organization - Each employee may have more than one supervisor. Supervisors specialize in a certain area.**
3) **Line-and-staff organization - Each worker has one main supervisor and special supervisors for specialized areas.**

Ask students to discuss why it is important for employees to know to whom they are responsible. Use TM 1.1, 1.2, and 1.3.

Q3. Who are co-workers, and what do they expect from each other?

A3. 1) **Co-workers are all the people with whom one works. Co-workers include supervisors, peers, and subordinates.**
2) **Co-workers expect courtesy, cooperation, and consideration from one another along with adequate performance on the job.**

Ask students who have been employed how they interacted with their co-workers.

Q4. Who are superiors and subordinates, and what rules must be followed when interacting with them?

A4. 1) Superiors
- a) Supervisor(s) and/or employer
- b) Expectations of employees
  - (1) Arrive and leave on time.
  - (2) Be courteous, honest, and dependable.
  - (3) Be productive.
  - (4) Be loyal.

2) Subordinates
- a) Employees that work under one's supervision
- b) Expectations of supervisors
  - (1) Show courtesy, respect, and tact. Do not publicly reprimand subordinates.
  - (2) Demonstrate leadership.
  - (3) Ask rather than order.

Ask students how they would respond to situations involving superiors and subordinates.

Q5. What are some employee benefits and some restrictions employees are expected to follow in a business system?

A5. 1) Seniority systems - based on length of service as an indication of knowledge and proficiency needed for advancement

2) Union membership - some businesses unionized; employees unite and push for better wages, working conditions, and benefits; membership optional or mandatory

3) Informal vs. formal organization - proper channels followed in formal organizations; grapevine is part of informal organizations, and proper channels may be bypassed

4) Dress codes - may require dress clothes, uniforms, or a certain type of clothes proven more satisfactory than others

5) Breaks - break times are usually set rest periods which are meant to refresh employees and enable them to do the best job possible

Have students explain specific requirements of business systems they have worked in.

Q6. What is morale, and how does it affect the business?

A6. 1) Morale is spirit or enthusiasm displayed by people working together.

2) High morale may be seen in dependability and co-worker encouragement.

3) Morale directly affects the business; high morale results in high productivity; low morale results in low productivity.

Discuss morale and write a definition on the board.

Q7. What are some practical steps that will help an employee be successful?

A7.
1) **Help the employer to earn more money than the employee costs.**
    - a) **Master present job.**
    - b) **Take initiative to learn more about the business.**
2) **Improve human relations skills.**
    - a) **Learn to accept and tolerate differences.**
    - b) **Learn to cooperate and work well with others.**

An employer hires an employee on the premise that the employee will help the company earn money. Discuss how an employee can use the above steps to become successful in a current position.

Q8. What are ethics, and why are they important?

A8.
1) **Ethics are the basic principles that determine an employee's attitude and direct his or her actions.**
2) **Good ethics enable an employee to get more satisfaction and enjoyment from a job.**
3) **Good ethics improve an employee's opportunity for advancement.**

Ask students to list some good ethics that are advantageous in the work place. Have students complete AS 1.1.

F. Other activities

Invite a placement director to discuss what an employer is looking for in a potential employee.

G. Conclusion

To be successful as an employee, one must accept the responsibilities that go with a job and learn to work within the business' structure. The correct attitude and ethics can help employees fulfill their roles in the business and put them on the way to reaching their career goals.

H. Competency

Explain the role of the employee.

I. Answers to Evaluation

1. d
2. b
3. d
4. c
5. a
6. a
7. b
8. c

J. Answers to AS 1.1

This assignment sheet is for discussion purposes only.

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS		Name ____________

Lesson I: Role of the Employee in the Agricultural Business		Date ____________

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which of the following is a practical step that will help an employee be successful?

   a. Help the business earn more money than the employees costs
   b. Improve human relations skills
   c. Master present job
   d. All the above

2. Proper channels may be bypassed in a(n) __________.

   a. Formal organization
   b. Informal organization
   c. Functional organization
   d. Line-and-staff organization

3. Subordinates expect superiors to __________.

   a. Show courtesy and respect
   b. Demonstrate leadership
   c. Be tactful
   d. All the above

4. Each employee may have more than one supervisor in which type of organizational structure?

   a. Line organization
   b. Formal organization
   c. Line-and-staff organization
   d. Informal organization

5. How can morale affect performance?

   a. High morale results in worker productivity.
   b. Poor attitudes result in high productivity.
   c. Workers with high morale show less initiative.
   d. All the above

6. Which of the following are true of ethics?

   a. Good ethics improve an employee's opportunity for advancement.
   b. Good ethics enable an employee to make a lot of money, but usually take away from job satisfaction.
   c. Good ethics allow an employee to enjoy a job more, but usually don't influence opportunity for advancement.
   d. Ethics are the basic procedures one must learn to complete a task.

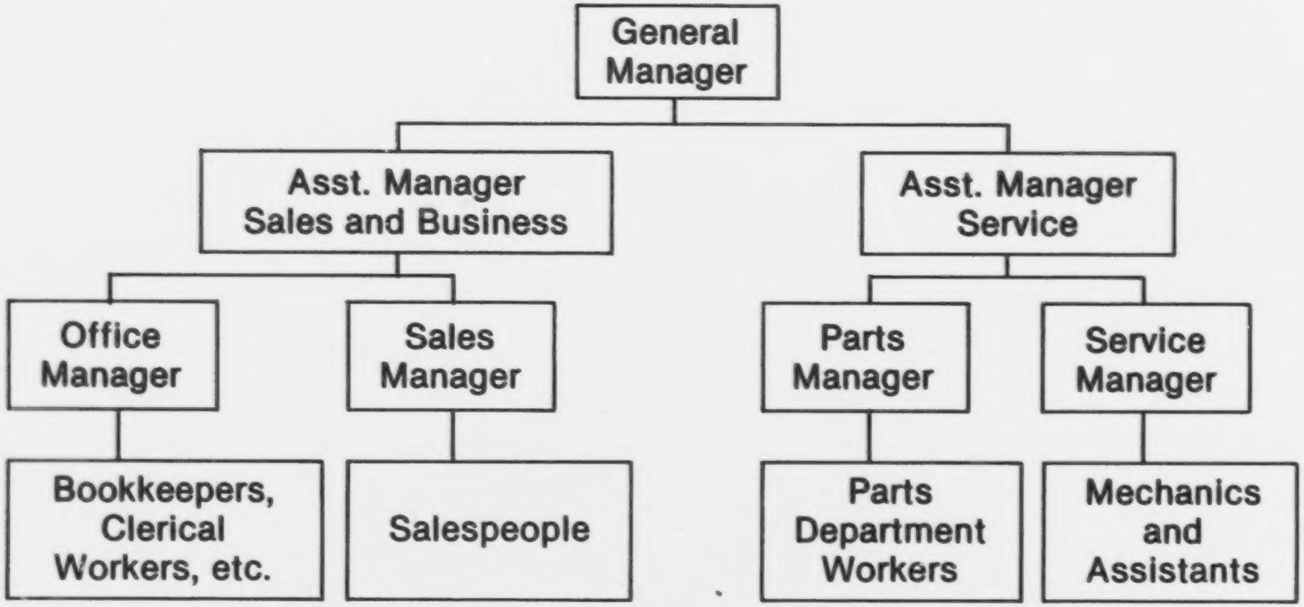
7. What are the three most important characteristics that an employer looks for in an employee?

   a. Enthusiasm, cooperation, and adaptability
   b. Honesty, self-control, and dependability
   c. Honesty, liberal views, and self-control
   d. Flamboyancy, sophistication, and culture

8. Which of the following is true about unions?

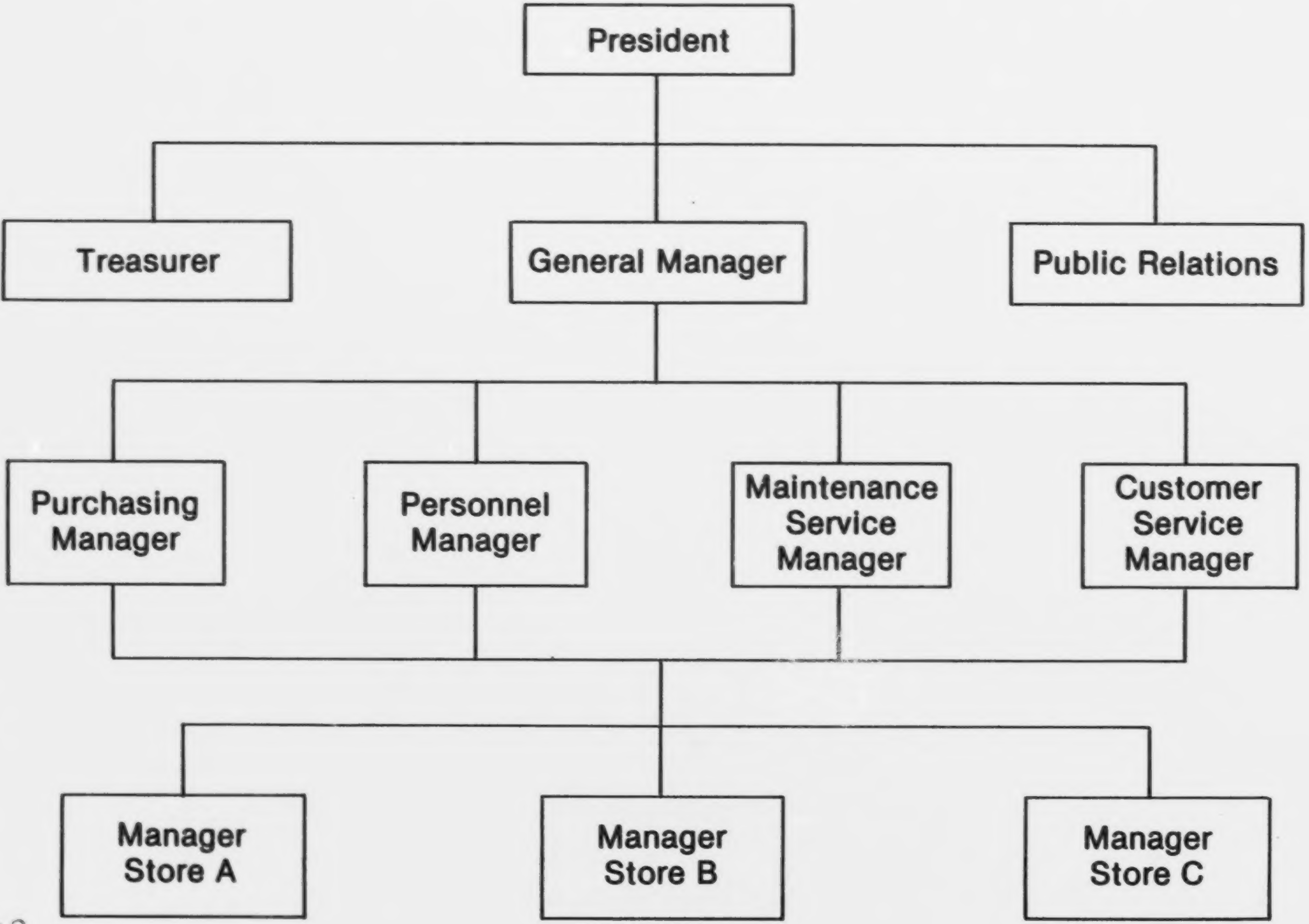
   a. Membership is always optional.
   b. Membership is always mandatory.
   c. Employees form unions to push for better wages, working conditions, and benefits.
   d. The purpose of a union is to help management operate the business efficiently.

Line Organization



- General Manager
  - Asst. Manager Sales and Business
    - Office Manager
      - Bookkeepers, Clerical Workers, etc.
    - Sales Manager
      - Salespeople
  - Asst. Manager Service
    - Parts Manager
      - Parts Department Workers
    - Service Manager
      - Mechanics and Assistants

Functional Organization



President

Treasurer

General Manager

Public Relations

Purchasing Manager

Personnel Manager

Maintenance Service Manager

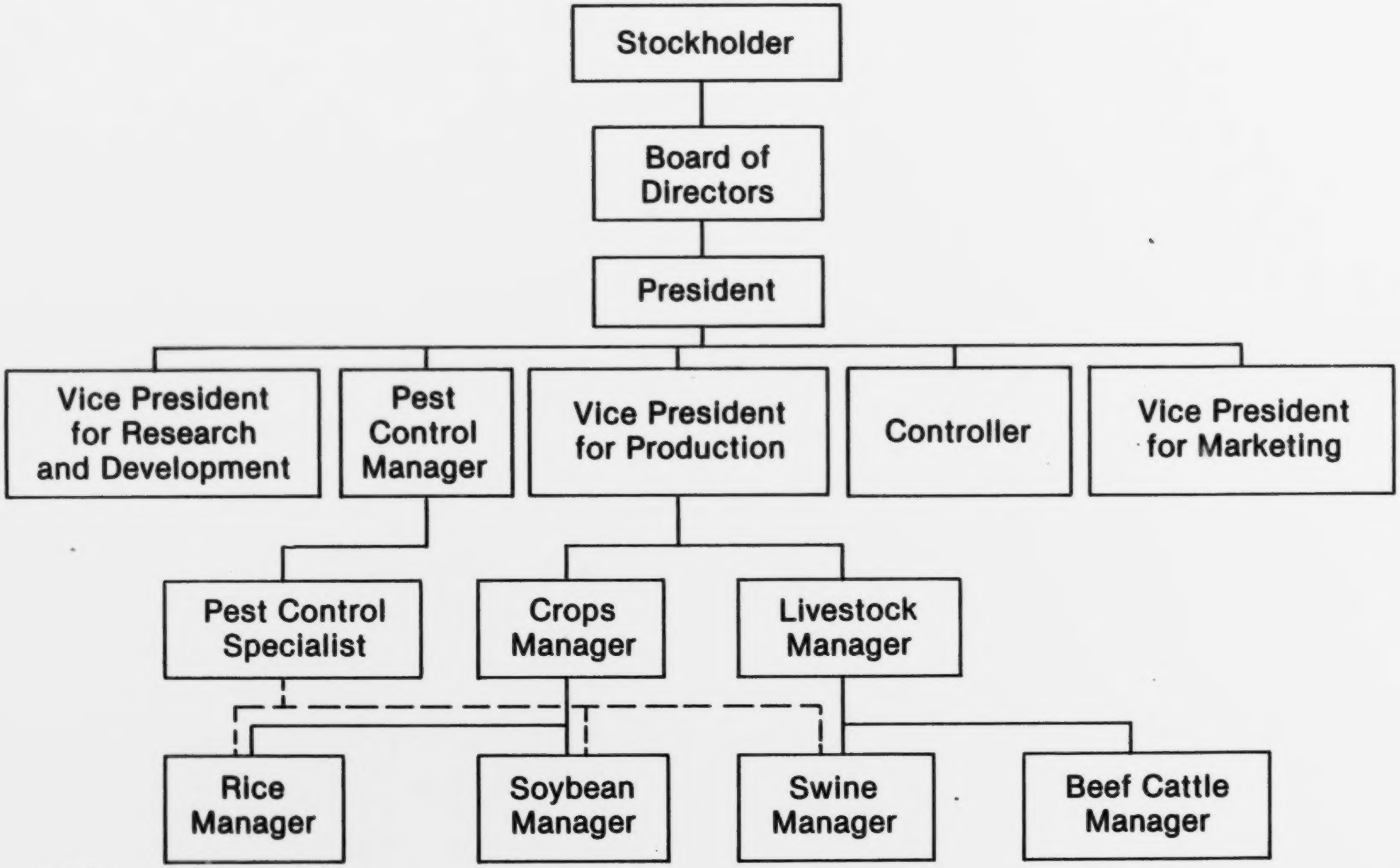
Customer Service Manager

Manager Store A

Manager Store B

Manager Store C

Line-and-Staff Organization



Stockholder

Board of Directors

President

Vice President for Research and Development

Pest Control Manager

Vice President for Production

Controller

Vice President for Marketing

Pest Control Specialist

Crops Manager

Livestock Manager

Rice Manager

Soybean Manager

Swine Manager

Beef Cattle Manager

TM 1.3

PROMOTION, AND HOW IT AFFECTS THE BUSINESS

Directions: Read the following situation and answer the questions below.

Linda Smith and Joe Hall both completed two years of bookkeeping in high school. After graduation they both took positions with the Evans Grain and Fertilizer Store.

Linda and Joe were both employed as bookkeepers in the accounting department. The head of accounts receivable was John Garrison. Mr. Garrison was highly satisfied with both Linda and Joe and felt they both had about equal ability, after two years on the job.

Mr. Garrison took a job with another business and the head of the accounting department appointed Linda Smith as the new head of the accounts receivable section. Joe Hall was hurt that he had not received the appointment. Joe became very angry when Linda found mistakes in his work and reprimanded him. After two weeks, Joe became quite upset about the whole matter and quit his job.

Questions:

1. What made Joe act in the above manner?
2. What could Linda have done to avoid the situation?
3. Do you think Joe acted in a mature manner when the situation developed?
4. Do you think this affected the morale of other employees?

Lesson 2: Communication Skills Needed in Agricultural Business

Objective: The student will be able to explain the need for effective communication skills in an agricultural business.

Study Questions

1. **How can one tell if communication is effective?**
2. **What are the main concepts of written communication?**
3. **What are the goals of written communication, and how can these goals be accomplished?**
4. **Why is a rough draft used in written communication?**
5. **What three questions do readers of written communication ask as they read?**
6. **What are the five C's of letter writing?**
7. **What guidelines should be followed to produce an attractive letter?**
8. **What role does the telephone play in modern communications?**
9. **What are the appropriate procedures for answering the business telephone?**
10. **What are the appropriate procedures for taking telephone messages and using the intercom system?**
11. **Who are some agricultural business personnel who may use two-way radio communication systems?**
12. **How can computer modems be used for business communications?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit IV.
2. Assignment Sheets
    - a) AS 2.1: Rewriting a Letter for Conciseness
    - b) AS 2.2: Answering the Business Phone

Teacher References

1. Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.

2. Hillison, John; John Crunkilton. Human Relations in Agribusiness. New York: McGraw-Hill, 1980.

Lesson 2: Communication Skills Needed in Agricultural Business

TEACHING PROCEDURES

A. Review

B. Motivation

Start at one end of the room, quickly whisper a phrase into the first student's ear. Have him or her whisper the phrase into the next person's ear and so on until the phrase has made it all the way across the class. Ask the last student to repeat the phrase. Usually there is a significant difference by the time the phrase has reached the last person because of communication problems. Ask students how this might affect a business.

C. Assignment

D. Supervised study

E. Discussion

Q1. **How can one tell if communication is effective?**

A1. **For communication to be effective, it must be clear enough to create the desired response from the receiver of the communication.**

Discuss effective communication with the class.

Q2. **What are the main concepts of written communication?**

A2. 1) **The written communication is based on the spoken language, but there are differences.**
- a) **Writing loses chance to explain further as done in speech.**
- b) **Writing is more permanent.**
- c) **Writing is more formal.**
- d) **Writing demands more correct and precise use of words and grammar than speech.**

2) **Words, sentences, and paragraphs are the basic parts of written communications. They are put together to do a particular job.**

3) **Good writing comes through the practice of applying principles of grammar learned and experience accumulated.**

Ask students to discuss the main concepts and rules of written communication and why they are important to effective, efficient communication.

Q3. What are the goals of written communication, and how can these goals be accomplished?

A3. 1) Goals of written communication
  a) To transmit a message with clear meaning
  b) To reveal the writer's personality
  c) To convey ideas and images to the reader
2) Plan to accomplish these goals
  a) Identify the purpose of the message.
  b) List the ideas and facts that will accomplish the purpose.
  c) Organize the information.

Discuss the different types of written communication and their importance in business. Let students share their written communication experiences with class members. Discuss in detail the goals of written communications and the plan to achieve these goals.

Q4. Why is a rough draft used in written communication?

A4. 1) A rough draft is the preliminary version of the final written communication.
2) In rough drafts, writers attempt to improve and organize the material so that the reader will want to read on and can easily understand the message.

Have students describe and discuss the use of rough drafts in paper writing. Talk about the benefits of writing a rough draft.

Q5. What three questions do readers of written communication ask as they read?

A5. 1) Why was this communication sent to me? - The purpose of the letter should be clear.
2) What does it do for me? - The reader needs to understand the benefit for his or her interest to be sustained.
3) Do I need to do something? - Most written communications should state what is to be done and how, but not all communications require the reader to act.

Discuss letter writing from the reader's point of view. Ask students what they think about when receiving and reading letters.

Q6. What are the five C's of letter writing?

A6. 1) Clarity
2) Conciseness
3) Completeness
4) Correctness
5) Courtesy

Ask students to list the five C's of letter writing and put them on the board. Have students discuss the value of each C. Have students complete AS 2.1.

Q7. What guidelines should be followed to produce an attractive letter?

A7. 1) Paper - Use plain, white paper or business stationery; never use lined paper.
   2) Spacing - Use even margins and consistent spacing of lines.
   3) Folding - Fold letters so they open ready to read. Make no more folds than necessary.
   4) Handwriting - Hand written letters for personal communication are acceptable for invitations, acceptances, condolences, congratulations, and thank-you notes.
      a) Write neatly and legibly.
      b) Use blue or black ink.
      c) Use format of typed letters.

Ask students what they think are the attractive qualities of a letter. Ask them when a hand written letter is appropriate.

Q8. What role does the telephone play in modern communications?

A8. 1) The telephone is one of the most important instruments of communication in the world.
   2) The telephone keeps businesses in touch with other businesses and customers.
   3) One must recognize and compensate for the limitations of telephones.

Discuss the importance of telecommunications in business. Ask students to list uses of telephones in business.

Q9. What are appropriate procedures for answering the business telephone?

A9. 1) Answer promptly, allowing a maximum three to four rings.
   2) Answer with a friendly greeting.
   3) Include the name of the company in greeting.
   4) Be cheerful and courteous, keep calls short, and allow caller to end the conversation.

Have students list proper telephone answering procedures. Have them give good and bad examples. List these procedures on the board. Have students complete AS 2.2.

Q10. What are the appropriate procedures for taking telephone messages and using the intercom system?

A10. 1) Because communication systems differ, employees should request a demonstration of the system used in their business.
   2) It is the responsibility of the message taker to make sure all the correct information is passed along to whom it was intended. Write neatly.
   3) All messages should include:
      a) Name of caller
      b) Date
      c) Time
      d) Caller's telephone number

        e) Message
        f) Name of message taker
    4) Some businesses provide forms for telephone messages.
    5) The intercom is used to locate recipients of telephone calls and to transfer calls.
        a) To use the intercom, simply press the labeled intercom button and dial the desired party's intercom number.
        b) An employee should ask a caller to wait while the employee tries quickly to locate the person being called. If the person being called cannot be found within a minute or so, the employee should take a message.

Ask students to describe how to take telephone messages and how to use office intercoms. Discuss the responsibility of the business employee.

Q11. Who are some agricultural business personnel who may use two-way radio communication systems?

A11. 1) Feed delivery truck driver
2) Farmer
3) Ranch foreman
4) Grain elevator manager
5) Veterinarian
6) Salesperson to make report and check for messages

Ask students to discuss how two-way radios could be used in various agricultural businesses.

Q12. How can computer modems be used for business communications?

A12. 1) To place purchase orders electronically
2) To send and receive electronic mail
3) To check market conditions and projections

Show students a computer modem and discuss how this modem transmits messages electronically over the phone line. Ask students how this could be used for business communications.

F. Other activities

1. Have the students write a business letter to a company.

2. Have the class visit a parts store. Have the parts manager show the class how to order parts using the computer.

G. Conclusion

Good communication is essential to a business. When the act of communicating is carried out in a proper and efficient way, the business, customers, and employees all benefit.

H. Competency

Explain the need for effective communication skills in an agricultural business.

I. Answers to Evaluation

1. c
2. d
3. a
4. c
5. b
6. d
7. b
8. d
9. d

J. Answers to Assignment Sheets

1. AS 2.1

One possible letter follows. The instructor needs to determine if the students' letters are appropriate.

> Dear Sirs:
>
> I am very impressed with your new line of lawn and garden fertilizer which I saw advertised in your magazine. I would like to give our customers the opportunity to review this product. Would you please send us a dozen brochures with our next shipment?
>
> Sincerely,

2. AS 2.2

Have the students work in pairs and role play the situation. One possible solution follows. The instructor needs to determine if the students' responses are appropriate.

The phone rings twice and Mary answers.

Mary: McCalls' Tree Service. This is Mary speaking. How can I help you?

Jack: I'm calling to complain about an error in my billing.

Mary: I'm sorry, sir. Our bookkeeper has left the office for the day, but if you could leave your name and number, I'll see that she gets the message.

Jack: Thank you, I would appreciate it. My name is Jack Jones and the number is 555-6709.

Mary: Thank you, Mr. Jones. (Hangs up.)

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS Name ______________

Lesson 2: Communication Skills Needed in Agricultural Business Date ______________

EVALUATION

Circle the letter that corresponds to the best answer.

1. Which of the following is not a goal of written communication?

   a. Transmit a message with clear meaning
   b. Reveal the writer's personality
   c. Mask the writer's personality
   d. Convey ideas and images to the reader

2. To accomplish the goals of written communication one must do which of the following?

   a. Identify the purpose
   b. List ideas and facts to accomplish the purpose
   c. Organize the information
   d. All of the above

3. Which of the following is true of a rough draft?

   a. It is a preliminary version.
   b. It is only prepared once.
   c. It is not used by experienced writers.
   d. It is not made for memos.

4. When using the business telephone, which of the following procedures should an employee follow?

   a. Hang up if a conversation becomes too long.
   b. Use common rules of courtesy primarily just with important customers.
   c. Allow the caller to end the conversation.
   d. Use the telephone whenever and for as long as it is convenient.

5. When taking a telephone message, an employee should not do which of the following?

   a. Use proper form if provided.
   b. Rely on memory.
   c. Write down all pertinent information.
   d. Write as neatly as possible.

6. Which of the following is not true of the differences between written and verbal communication?

   a. Writing loses the chance to explain the message further as done in speech.
   b. Writing is more permanent.
   c. Writing is more formal.
   d. Writing does not require such precise use of words and grammar as speech does.

7. Which of the following groups contains the five C's of letter writing?

   a. Courtesy, clarity, constancy, conciseness, completeness
   b. Courtesy, conciseness, completeness, clarity, correctness
   c. Completeness, casualness, consciousness, correlation, contempt
   d. Correctness, courtesy, clarity, conciseness, correlation

8. Which of the following is true of an attractive letter?

   a. Hand written letters should be done in a different format from typed letters.
   b. Plain, white paper or lined business stationery should be used.
   c. The right margin should always be larger than the left.
   d. Letters should be folded so they open ready to read.

9. How can computer modems be used for business communications?

   a. To place purchase orders electronically
   b. To send and receive electronic mail
   c. To check market conditions and projections
   d. All the above

REWRITING A LETTER FOR CONCISENESS

Directions: Read the following situation and answer the questions below.

Joe has been asked to compose a letter to the B. Est Company to obtain a dozen brochures describing the new line of lawn and garden fertilizer. His first attempt appears below.

> Would you be so generously kind as to transmit to me 12 dozen pamphlets on your fantastic new improved product which I saw advertized in your magzine which I recently had the opportunity to review quite throughly.
>
> I was very excited and very impressed with the grand features of this product and sincerely believe that our customers which have been with us a very long time and which we hope to keep as good customers would really go crazy over the fantastic new features.
>
> I am positive you will be more than kind enough to send these pamphlets because we carry your other stuff and we have lots of pamphlets on all sorts of your products and I especially like the red and white one on the garden tractors.

Questions:

1. Will Joe receive the correct item? Why or why not?

2. What would your first impression be of Joe's company?

3. Using the five C's of effective letter writing, rewrite Joe's letter.

AS 2.2

ANSWERING THE BUSINESS PHONE

Directions: Read the following situation and answer the questions given below.

Situation:

Jack Jones - an unhappy customer

Mary Smith - a customer relations employee for McCalls Tree Service

Jack calls the McCalls' Tree Service to complain about an error in billing resulting from an overcharge on a telephone order. The phone rings 10 times and Mary answers.

Mary: Hello?

Jack: Is this McCalls' Tree Service?

Mary: Yes, what can I do for you?

Jack: I'm calling to complain about an error in my billing.

Mary: The bookkeeper is not here today. You will need to call back.

Jack: I demand to talk to the manager!

Mary: The manager is not here. (Hangs up.)

Questions:

a) Was the phone answered properly?

b) How would you handle the situation if you were the customer relations employee?

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

Lesson 3: Skills Needed for an Agricultural Sales Career

Objective: The student will be able to identify the skills needed for a successful career in agricultural sales.

Study Questions

1. **What is selling, and who does it involve?**
2. **What is the importance of sales in the agricultural business?**
3. **How is the salesperson paid?**
4. **What are some advantages and disadvantages of a selling career?**
5. **What personal skills are needed in selling?**
6. **What communication skills and technical information are needed in sales?**
7. **What are the five stages in making a sale?**
8. **What are the types of sales approach and how is each used?**
9. **What motivates people to buy?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit IV.
2. Assignment Sheet
   a) AS 3.1: Rate Your Sales Personality

Teacher References

1. Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.
2. Miller, Larry E. Selling in Agribusiness. New York: McGraw-Hill, 1979.
3. Transparency Master
   a) TM 3.1: Five Stages in Making a Sale

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

Lesson 3: Skills Needed for an Agricultural Sales Career

TEACHING PROCEDURES

A. Review

B. Motivation

Talk to students about salaries. Professional salespeople have some of the highest salaries. Earning these high salaries requires a good deal of effort and a thorough understanding of sales. Salespeople must understand what motivates people to buy.

C. Assignment

D. Supervised study

E. Discussion

Q1. What is selling, and who does it involve?

A1. 1) Selling is the process of one person exchanging goods or services with another for some medium of exchange, such as money. Selling often involves persuasion.
2) Everyone in the business is involved to some degree in the sales process because of customer relations and business services.

Ask students to discuss the definition of selling. Discuss why everyone in the business is involved in the selling process. Everyone's attitude and treatment of customers affects the image of the business. A good business image helps facilitate the saleperson's job.

Q2. What is the importance of sales in the agricultural business?

A2. Sales generate income. Without adequate sales, the business will fail.

Discuss the importance of sales for an agricultural business.

Q3. How is the salesperson paid?

A3. 1) Commission - a percentage of sales
2) Straight salary - a set amount
3) Combination - both salary and commission

Discuss how salespeople are paid. Ask students to discuss which type of payment system they would prefer. Earnings of salespeople selling on commission are directly related to that person's ability to sell.

Q4. What are some advantages and disadvantages of a selling career?

A4. 1) Advantages
   - a) Jobs readily available for good salespeople
   - b) Potential for unlimited income with commission pay
   - c) Interaction with a variety of people

2) Disadvantages
   - a) There is no guaranteed income with commission pay.
   - b) Salespeople may have to deal with customer dissatisfaction.
   - c) Travel may be required.
   - d) Long work hours may be required.

Have students discuss the advantages and disadvantages of a selling career.

Q5. What personal skills are needed in selling?

A5. 1) Outgoing personality

2) Initiative
   - a) Showing interest in the customer's needs
   - b) Directing the conversation toward a sale

3) Persistence

4) Ability to make a good first impression

5) Good communication skills

Discuss the personal skills needed in a selling career.

Q6. What communication skills and technical information are needed in sales?

A6. 1) Communication skills
   - a) Listening
     - (1) Listening allows the salesperson to understand the customers' wants and needs.
     - (2) Listening shows the customer that the salesperson is interested in the customer's wants and needs.
   - b) Oral - Talk clearly and concisely with customer.
   - c) Written - Accurately and effectively write reports and letters needed for business transactions.

2) Technical information
   - a) Product or service knowledge
   - b) Competition knowledge

Ask students what communication skills are important in sales, and what two areas of technical knowledge are important to a salesperson. List these on the board.

Q7. What are the five stages in making a sale?

A7. 1) Preparation - to be ready

2) Approach - to gain attention
   - a) Greeting approach
   - b) Merchandise approach
   - c) Service approach

3) Demonstration - to gain interest
4) Overcoming resistance - to get customer to perceive a want or need for the product
5) Close - to promote action

Ask students why it is important to have procedures or steps to follow. Ask them to list the five stages in making a sale. Use TM 3.1 to reinforce or clarify their list. A typical sale may follow these steps in order; however, the students should realize that overlapping may occur.

Q8. What are the types of sales approach and how is each used?

A8. 1) Greeting approach
  a) Greet customers by name if they are acquaintances.
  b) Be direct and straightforward.
  c) Take control of conversation.
2) Merchandise approach
  a) First comment is about the product.
  b) Point out product's main features and advantages.
  c) Experts favor this approach.
3) Service approach
  a) Service approach is most common.
  b) Check to see if customer needs assistance.
  c) Avoid questions with "yes" or "no" answers.

Ask students to discuss each type of approach and how it can be used. Discuss the importance of knowing when to use each approach. Have students complete AS 3.1.

Q9. What motivates people to buy?

A9. 1) Needs - required for the well-being of the individual; listed in order of importance below:
  a) Physical - food, shelter, and clothing
  b) Safety
  c) Affection
  d) Recognition
  e) Self-actualization
2) Wants - may not be essential for survival; may also be needs

Ask students why they might want to buy a car. List the reasons on the board. Divide the reasons into needs and wants. Then subdivide needs into categories. A car may be needed for transportation to earn income to meet needs for foods, clothing, and shelter. This would make owning a car a need. However, owning a luxury car would be a want because it is not essential for survival.

F. Other activities

1. Invite a salesperson to speak to the class on his or her experiences and how he or she uses the five stages of making a sale.

2. Make a sales presentation.
    a) Select an item that you want to sell.
    b) Write an outline for a sales presentation.

G. Conclusion

Selling is a competitive, demanding career, and to succeed in it one must master essential personal and communication skills. A salesperson may be successful with any type of approach, but the key to successful selling is understanding what motivates a customer to buy.

H. Competency

Identify skills needed for a successful career in agricultural sales.

I. Answers to Evaluation

1. d
2. a
3. a
4. a
5. a
6. b
7. c
8. c

J. Answer to AS 3.1

This assignment sheet is for discussion purposes only. The following rating scale could be used for discussion purposes.

90-100: Excellent. You have the traits of a great salesperson.
80-90: Good. You will be a successful salesperson.
70-80: Fair. With a litle work you can succeed in the sales market.
69 and below: Meet with your instructor to determine areas where you are weakest and work to improve your rating.

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

Name ______________

Lesson 3: Skills Needed for an Agricultural Sales Career

Date ______________

EVALUATION

Circle the letter that corresponds to the best answer.

1. Who in a business does selling involve?

   a. The manager
   b. The salesperson
   c. The service representative
   d. Everyone in the business

2. What type of pay is based only on a percentage of sales?

   a. Commission
   b. Straight salary
   c. Combination of salary and commission
   d. All the above

3. Which sales approach do experts favor most?

   a. Merchandise approach
   b. Greeting approach
   c. Service approach
   d. Product approach

4. If a salesperson comments first about the product, which approach is being used?

   a. Merchandise approach
   b. Service approach
   c. Greeting approach
   d. Both a and b are correct

5. What items are required for the well-being of an individual called?

   a. Needs
   b. Wants
   c. Necessaries
   d. None of the above

6. Which of the following is not an advantage of a selling career?

   a. Jobs are readily available for good salespeople.
   b. Work hours are usually normal.
   c. There is opportunity for interaction with a variety of people.
   d. Potential for income can be unlimited.

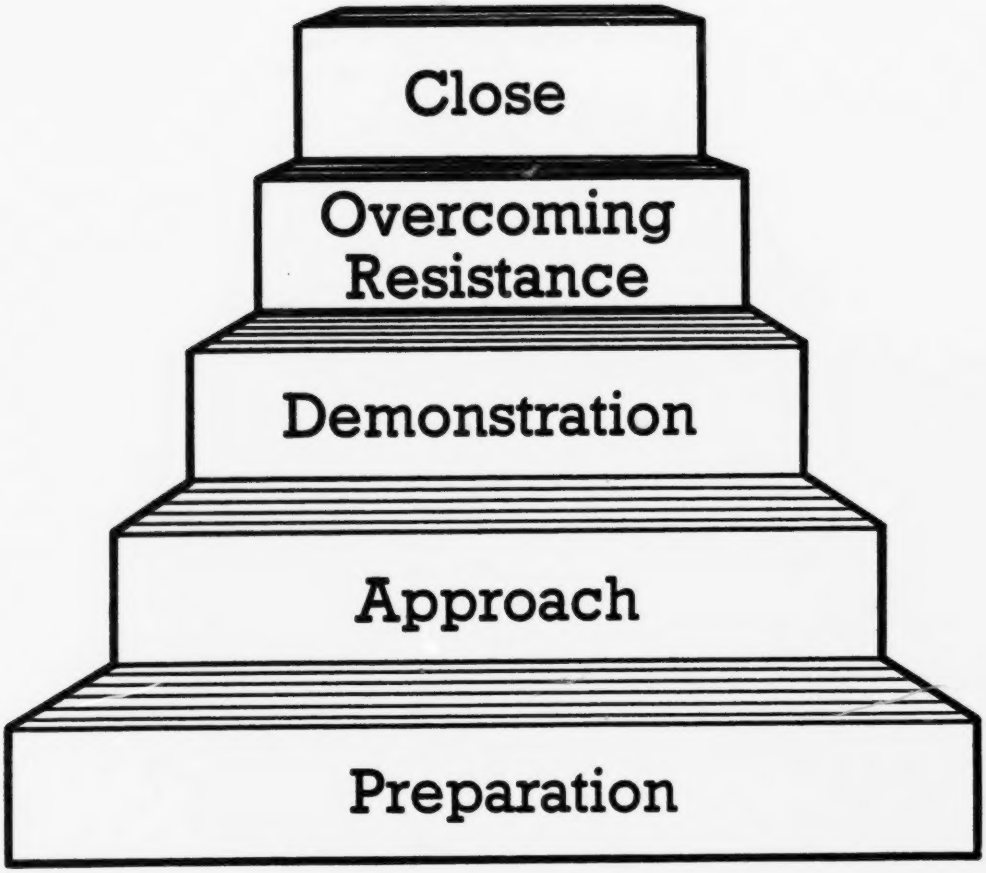
7. What are the five stages in making a sale?

   a. Preparation, approach, sales pitch, negotiation, close
   b. Approach, preparation, demonstration, consultation, close
   c. Preparation, approach, demonstration, overcoming resistance, close
   d. Preparation, approach, demonstration, negotiation, close

8. What is the correct order of importance for needs?

   a. Physical, safety, recognition, affection, self-actualization
   b. Physical, recognition, safety, affection, self-actualization
   c. Physical, safety, affection, recognition, self-actualization
   d. Safety, physical, affection, recognition, self-actualization

Five Stages in Making a Sale


Close
Overcoming Resistance
Demonstration
Approach
Preparation

RATE YOUR SALES PERSONALITY

Directions: The purpose of this assignment sheet is to help you form an opinion of your sales personality and rate yourself on ten important qualities of an effective salesperson. Be as objective as possible. Place an "X" in the appropriate blank. Total the points at the side of each blank marked and check with your instructor for the rating scale.

1. **Confidence**

To what extent do you succeed in winning the confidence, respect, and goodwill of your friends and classmates?

___Exceptionally successful (10)
___Usually successful (7)
___About 50-50 (5)
___Seldom (3)
___Never (0)

2. **Perseverance**

To what extent are you capable of sustained effort (staying at a task until it is finished)?

___Always stick with it (10)
___Sometimes discouraged (7)
___Easily discouraged (5)
___Seldom (3)
___Never (0)

3. **Responsibility**

How responsible (reliable) are you in performing your work?

___Thoroughly responsible (10)
___Ordinarily responsible (7)
___About 50-50 (5)
___Seldom (3)
___Never (0)

4. **Tact**

To what extent do you say or do things without hurting the feelings or incurring the ill opinion of others?

___Always tactful (10)
___Generally tactful (7)
___About 50-50 (5)
___Seldom (3)
___Offend others constantly (0)

5. **Loyalty**

Would you stand behind your employer and stand up for what you believe is right?

___Always loyal (10)
___Usually loyal (7)
___Hesitate (5)
___Give up easily (3)
___Never stand firm (0)

6. **Resourcefulness**

How resourceful are you in taking action quickly in a new or unexpected situation?

___Exceedingly resourceful (10)
___Fairly loyal (7)
___So-so (5)
___Seldom resourceful (3)
___Never resourceful (0)

7. **Leadership**

How well can you lead, direct, or influence others?

___Can lead forcefully (10)
___Lead most of the time (7)
___To a certain extent (5)
___Usually avoid leadership (3)
___Never (0)

8. **Oral expression**

How well do you use the English language?

___Exceptionally well (10)
___Better than average (7)
___About average (5)
___Make many errors (3)
___Hard to understand (0)

9. **Poise**

To what extent are you poised (maintain self-control)?

___Exceptionally well poised (10)
___Usually well poised (7)
___About average (5)
___Lose control frequently (3)
___Rarely poised (0)

10. **Honesty**

To what extent are you honest?

___Always (10)
___Usually (7)
___About 50-50 (5)
___Rarely (3)
___Never (0)

Total score:__________

Lesson 4: Promoting Agricultural Products

Objective: The student will be able to describe the use of promotion in agriculture.

Study Questions

1. **What is promotion?**
2. **What are the objectives of promotion?**
3. **What promotional methods are used in agriculture?**
4. **What are the major media used in advertising?**
5. **What are the benefits of advertising?**
6. **How are advertising rates determined?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit IV.
2. Assignment Sheet
    a. AS 4.1: The Cost of Media Advertising

Teacher References

1. Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.
2. McGuire, James E. Advertising and Display in Agribusiness. New York: McGraw-Hill, 1979.

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

Lesson 4: Promoting Agricultural Products

TEACHING PROCEDURES

A. Review

B. Motivation

Give the class an example product or service that is needed in the community. Ask them how they would try to convince customers to purchase this product or service. Have them work in groups of three or four for a few minutes to develop promotional ideas. Have the groups discuss their ideas with the class.

C. Assignment

D. Supervised study

E. Discussion

Q1. What is promotion?

A1. 1) **Promotion is communication intended to sell a product, service, or idea.**

Ask students to describe what promotion is and what it accomplishes in agriculture. Have students prepare a bulletin board showing examples of promotion.

Q2. What are the objectives of promotion?

A2.
1) **To inform**
2) **To create interest**
    a) **In selling points of product or service**
    b) **In benefits of business or industry to society**
3) **To persuade - The final objective of promotions is to persuade customers to buy the products or services.**

Ask students how promotion can be used in various areas of agriculture.

Q3. What promotional methods are used in agriculture?

A3.
1) **Personal selling - one individual informing another about a product in a way that creates interest and persuades the newly informed individual to buy the product**
2) **Displays - arrangement of merchandise set up to attract attention of potential customers and to persuade them to buy the merchandise**
    a) **Exhibits - displays at fairs, conventions, and trade shows; allow firsthand observation.**

  - b) Demonstration - displays showing the product or service being used
- 3) Sponsorship - providing financial support to an activity outside the business
  - a) Sponsorship helps to create a good image and establish future customers.
  - b) Awards, events, and individuals competing in events are often sponsored by businesses.
- 4) Sales promotion - giving away items that contain a message with the name and address of the business
- 5) Publicity - nicknamed "free advertisement"; mention of business in a mass media news story
- 6) Advertising - paid, non-personal promotion of products, information, or services by an identified sponsor

Ask students to name the different methods used in the promotion of agricultural products and services.

Q4. What are the major media used in advertising?

A4.
1) Television
2) Radio
3) Newspapers
4) Magazines
5) Trade journals

Ask students to name the major media used in advertising. Discuss with the students how the different types of media are used. Ask students to name some examples of local advertising.

Q5. What are the benefits of advertising?

A5.
1) Gets attention and delivers the message fast
2) Reaches many people economically
3) Identifies customers in large populations
4) Presents facts in a more controlled manner with advertising than with personal sales

Ask students how advertising can be more beneficial to the business than other methods of promotion.

Q6. How are advertising rates determined?

A6.
1) Size of advertisement
   - a) Broadcast - length of commercial
   - b) Print - size of area used for advertisement
2) Size of audience reached
   - a) Broadcast
     - i) Time of day
     - ii) Program slot

b) **Print**
  i) **Circulation**
  ii) **Publication day**
  iii) **Placement**

3) **Make-up of audience reached**

Discuss how advertising rates are determined. Have students complete AS 4.1.

F. Other activities

1. Invite an advertising agent from the local radio station or newspaper to discuss how advertisements and other promotional activities are developed for area businesses.

2. Have each student prepare a newspaper ad. Divide the class in parts. Have the students critique their partner on cost and effectiveness of the ad.

3. Have students prepare an outline for a TV or radio advertisement.

4. Have students collect agribusiness ads. Using the ads which contain good elements of design, prepare a bulletin board.

5. Have students prepare a direct mail, handbill, or flyer to promote an agribusiness product.

G. Conclusion

Promotion is used by businesses to inform the public, to attract customers, and to persuade them to buy products. Promotion ranges from a salesperson giving a sales pitch to a business providing uniforms for a little league baseball team. In today's world of complex mass communication, many businesses use advertising, a type of paid promotion that is non-personal. Advertising allows a business economically to target its message to a certain size and type of audience.

H. Competency

Describe the use of promotion in agriculture.

I. Answers to Evaluation

1. d
2. c
3. d
4. c
5. d
6. a. To inform
   b. To create interest
   c. To persuade

J. Answers to AS 4.1.

It is suggested that the instructor take the students on a field trip to the local newspaper and radio station to obtain information on the cost of advertising. If a field trip is not possible, the students could call or go to the business for the information. This assignment sheet is mainly for discussion purposes. If this assignment is to be graded, the instructor will need to determine if students' responses are appropriate.

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS Name ______________

Lesson 4: Promoting Agricultural Products Date ______________

EVALUATION

Circle the letter that corresponds to the best answer.

1. How are advertising rates determined?

   a. Makeup of audience reached
   b. Size of advertisement
   c. Size of audience reached
   d. All the above

2. What is a non-personal promotion of products, information, or services by an identified sponsor?

   a. Demonstration
   b. Publicity
   c. Advertisement
   d. Exhibits

3. Which of the following is a promotional method used in agriculture?

   a. Personal selling
   b. Advertising
   c. Displays
   d. All the above

4. What is communication intended to sell a product, service, or idea?

   a. Advertisement
   b. Publicity
   c. Promotion
   d. Demonstration

5. Which of the following is a benefit of advertising?

   a. It is cheaper than publicity.
   b. It offers the audience firsthand observation of products and services.
   c. Representatives can personally interact with the audience and answer its questions.
   d. It can get the attention of potential customers and deliver the message fast.

Complete the following short answer question.

6. List the three objectives of promotion.

   a.
   b.
   c.

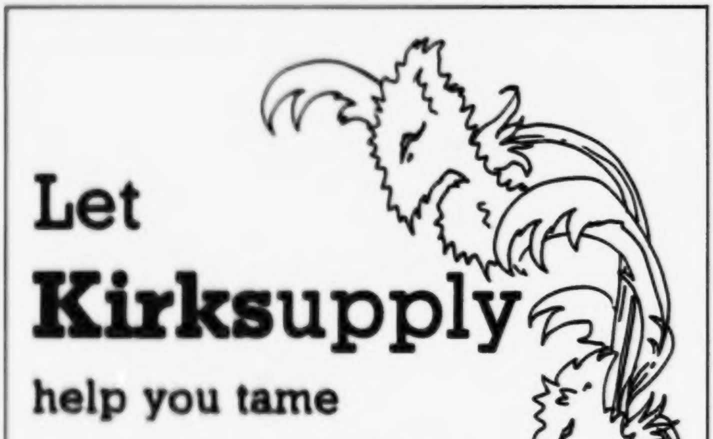
AS 4.1

THE COST OF MEDIA ADVERTISING

Your garden supply store is planning a spring sale. The manager has asked you to find the cost of advertising in the newspaper and on the radio. The ads have been prepared for you. Answer the questions following each ad by checking with the appropriate business.

NEWSPAPER

The 2-column by 6-inch ad pictured below is ready for printing in the local paper.



Let
Kirksupply
help you tame
LAWN INVADERS

*20% off
all herbicides
thru June*

801 High St.
Phone: 555-4408

Open 9-6 Mon-Sat.

1. What is the cost of placing this newspaper ad for each situation?

    a. Back page of the weekday issue __________

    b. Middle of the weekday issue __________

    c. Back page of the Sunday issue __________

    d. Middle of the Sunday issue __________

    e. One color ad __________

2. Does the paper guarantee where the ad will be placed? __________

RADIO

Announcer: "Is your lawn" (Begin marching sound effects.) "hidden under an army of dandelions?" (Begin battle sound effects.) "Are those ferocious yellow monsters devouring your garden? Let KirkSupply help you tame" (sound effect of an explosion) "lawn invaders." (Marching, battle, and explosion sound effects fade.) (Begin sound effects of birds singing.) "Now through June KirkSupply is offering 20% off all herbicides. KirkSupply is the center for all your garden needs. KirkSupply, 801 High St., phone 555-4408. Open Monday, through Saturday, nine to six."

1. What is the cost of broadcasting this 30-second ad on your local radio station at the following times?

    a. Once each day for 12 days between 6:00 a.m. and 10:00 a.m. __________

    b. Once each day for 12 days between 10:00 a.m. and 3:00 p.m. __________

    c. Once each day for 12 days between 3:00 p.m. and 7:00 p.m. __________

    d. Three times each day for 4 days at any time __________

    e. Three times each day for 4 days at 7:00 a.m., 12:30 p.m., and 6:30 p.m. __________

2. Can the radio station guarantee when the ad will run? __________

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

Lesson 5: Using Agricultural Displays

Objective: The student will be able to explain the appropriate use of agricultural displays.

Study Questions

1. **What are the two classifications of displays?**
2. **Where are displays used, and what are the advantages of the different locations?**
3. **What are some steps in planning an effective display?**
4. **What effects can enhance a display?**
5. **Why should displays be changed frequently?**

Student References

1. Agricultural Management and Economics (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1987. Unit IV.
2. Assignment Sheet
   a) AS 5.1: Garden Supply Display

Teacher References

1. Agricultural Businesss Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.
2. McGuire, James E. Advertising and Display in Agribusiness. New York: McGraw-Hill, 1979.

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

Lesson 5: Using Agricultural Displays

TEACHING PROCEDURES

A. Review

B. Motivation

Give an assignment about a week before teaching this lesson. Ask students to visit local agribusinesses and observe the displays. Ask students to identify why some displays are better than others. Over the years one can keep slides or pictures of displays made for annual FFA sales, promoting FFA week or other activities. These will be good to show to the class as an incentive for new projects.

C. Assignment

D. Supervised study

E. Discussion

Q1. What are the two classifications of displays?

A1.
1) **Promotional - attract attention to products and prompt customers to purchase**
2) **Institutional - promote the business as a whole and present a good image or a particular aspect of the business**

Ask students to name the two main types of displays.

Q2. Where are displays used, and what are the advantages of the different locations?

A2.
1) **Outside the business**
    a) **Exhibits at fairs and trade shows**
    b) **Demonstration plots**
    c) **Displays outside businesses - used for items too large to display inside; visibility not limited to business hours or confines of building**
2) **Windows - draw customers into the store**
3) **Entrances and exits - areas with most traffic**
    a) **To greet the customer when entering**
    b) **To leave a favorable impression with customer when exiting**
4) **Point of purchase - area with second largest amount of traffic; used for common, inexpensive items likely to be purchased on impulse**
5) **Open areas - used for large displays; high visibility within store because stand out from other merchandise**
6) **Walls - utilize space efficiently**
7) **Hanging - save space**
8) **Shelves - allow easy categorizing of items**

9) Closed cases
   (1) Used for fragile items, expensive items, or items that need special handling
   (2) Efficient way to display small items
10) Shadow boxes - box open just in the front that may use lighting and special effects to draw customers' attention to items; used with expensive items

Ask students where displays are used in agriculture, and how various locations help determine their content.

Q3. What are some steps in planning an effective display?

A3. 1) Establish theme - central idea that unites the displayed articles
2) Plan settings - determine background, floor covering, and extra accessories to emphasize benefits of displayed items and to convey theme
3) Draw sketches
   a) Show the general layout of the display.
   b) Provide a general plan of action.
   c) Help in determining the materials needed.
   d) Make several sketches to try different possibilities.

Ask students to suggest major considerations in designing a display.

Q4. What effects can enhance a display?

A4. 1) Different sizes and unique shapes attract attention.
   a) Magnification - making model "bigger than life" to show fine detail or to make displays novel and attractive
   b) Miniaturization - making a small scale model of something that might be too large to show life-size, for example, a full-size building
2) Adding sound can attract customers and grab their attention.
3) Adding animation in the form of characters like Smokey the Bear or using visual aids such as slides, film clips, and video tapes can create interest.
4) Adding the unusual or the unexpected such as a good smell or a "talking object" to a display can attract customers.

Ask students how one might provide novelty in displays that would help provide attraction for customers.

Q5. Why should displays be changed frequently?

A5. 1) Customers get tired of seeing the same thing and soon lose interest. Business displays need to be changed every week or every two weeks for variety.
2) Displays tend to lose quality over time. Plants die, colors fade, and dust collects.
3) Some displays are part of an on-going promotional campaign and must be changed to keep up with the campaign sequence.

Ask students to give reasons why displays should be changed periodically. Have students complete AS 5.1.

F. Other activities

Invite a local agribusiness manager to speak with the class on how to develop different types of displays and which ones are most effective.

G. Conclusion

Noticeable and attractive displays are important for attracting customers to a business and persuading them to purchase a product or service. Displays are used at fairs, conventions, meetings, demonstration plots, store windows, and many other strategic places. Displays should establish a theme that is clear and easy to remember. Displays should also be updated to provide freshness.

H. Competency

Explain the appropriate use of agricultural displays.

I. Answers to Evaluation

1. a
2. d
3. b
4. b
5. d
6. c
7. c

J. Answers to AS 5.1

The following is an example. Answers will vary.

1. Six 6" tall tomato plants
   Six 6" tall cabbage plants
   Six 6" tall pepper plants
   (Each plant should be in an individual pot.)
   Topsoil (loose)
   One bag of topsoil
   One bag of fertilizer
   One hoe
   One spade

2. "Anyone can be a success at gardening."

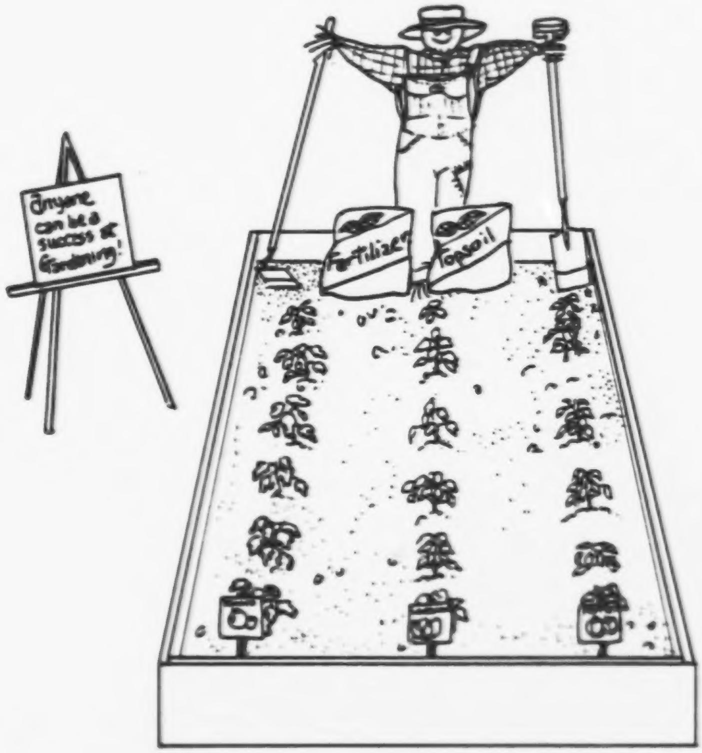
3. The scene will be a small garden plot with three rows of plants covered with a thin layer of topsoil to the top of their containers. At the end of the plot is a grinning scarecrow holding a hoe in one hand and a spade in the other. A bag of fertilizer and a bag of topsoil rest at his feet. A posterboard is at one side of the plot with the theme written on it.

4. Brown: soil and boots of scarecrow
   Red: writing on white cards used as row identifiers
      flannel shirt on scarecrow
      writing on white posterboard
   Green: plants

5. The display will be located near the front and center of the store. Products similar to those on display will be shelved nearby.

6. The garden plot will be contained in a 6"-deep wooden box with dimensions of 3'x 5'.
   Need: wood, hammer and nails
   The scarecrow will be 4' tall. It is to be made of straw and mounted on a wooden T.
   Need: clothing, twine, wood, straw
   The posterboard will be white with red printing. It will be 18" x 18". It will be mounted on an easel.

7.


Anyone can be a success at Gardening!
Fertilizer
Topsoil

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS Name ______________

Lesson 5: Using Agricultural Displays Date ______________

EVALUATION

Circle the letter that corresponds to the best answer.

1. An institutional display is one that would do which of the following?

   a. Promote the business as a whole
   b. Attract attention to products and supplies
   c. Prompt customer to purchase
   d. Open the entire business as a display area

2. Sketches can be used to effectively plan displays in what way?

   a. By showing the general layout of the display
   b. By helping in determining the materials needed
   c. By giving a general plan of action
   d. All the above

3. Why should displays be changed frequently?

   a. Employees like variety
   b. Promotional campaigns change frequently
   c. Customers become attached to displays
   d. Displays maintain the same quality and can be used later on.

4. Which of the following is a step in planning an effective display?

   a. Look at old displays and try to make a new display similar to them.
   b. Establish a theme.
   c. Capitalize on traditional methods of promotion.
   d. Form setting by rearranging materials from the last display.

5. Where would displays be used?

   a. At fairs
   b. In store windows
   c. On store shelves
   d. All the above

6. Which of the following is an effect that can enhance a display?

   a. Use similar, ordinary sizes and shapes so the customer can identify with them.
   b. Keep the display predictable so customers are not shocked.
   c. Add sound to attract customers.
   d. All the above

7. Which of the following is true of displays at points of purchase?

    a. Points of purchase are the areas with the most customer traffic.
    b. Display items at points of purchase should be expensive to attract customers' attention.
    c. Customers often do impulse buying at points of purchase.
    d. Points of purchase have higher visibility than outside displays.

GARDEN SUPPLY DISPLAY

Directions: Develop a plan for displaying garden supplies.

1. What are the products to be displayed?

2. Establish a theme.

3. Describe the finished display.

4. What will be the color scheme?

5. Where will the display be located?

6. Plan the setting. What will be the background, floor coverings, and accessories? What items are needed, if any, for the construction of the display?

7. On the back of this page, draw a sketch of the display. Use labels to indicate size, shape, and distance of items.